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EDITORIAL COMMENT

Times sure change, we used to hear that we were wasting a lot of valuable paper and ink when we were kids drawing those fantastic intricate pictures and maps of tunnels and caves. In my fourth year in school, about 1939 all we heard on the radio was about the German bombing of small countries in Europe. So a lot of notebook paper was covered with a-ero-planes, that's before they became airplanes, with the airborne parachuting all over the place. We also designed the most impregnable tank traps ever seen. Now we hear that we are wasting a lot of valuable paper and *toner*. But I just can't resist printing out on our laser printer each new high resolution file submitted. And with David Goben's Hi Resolution Utilities, you can do so many things to the same picture. You can print it half size, quarter size, black on white, white on black, black line striped background, white line striped background, reverse the picture and just about anything you want to do except turn it inside out, and maybe by the next issue David will tell us how to do that too!

All in all its really no waste of paper and toner, it's fun. Or if you don't have a laser printer you can get just as much fun out of printing with your dot matrix printer. But be careful, mama just might insist that you start turning that fan fold paper over and printing on both sides. If you can bear to part with your art work, it makes very good garbage wrap, or packaging material - so there really isn't any waste, mama. Of course you wouldn't use any fan fold paper for those purposes until after it was printed on, would you?

July
1992

New Products

This month brings us a new bulletin board host software system, by Leonard Lorden. Leonard says, "this is my first adventure in presenting something to the commercial market" and he would welcome any and all suggestions from bulletin board operators and would-be bulletin board operators.

Writing a manual for a new program can be a very tricky proposition for any new software author. You don't want to leave out any of the information needed to instruct the new user, at the same time you don't want to create an encyclopedia (of everything about the computers operation) that is heavier than the computer itself. Many times it is the second printing of the manual that is the best, provided the author has some input from the users of the first manual who inform him of areas that are unclear and could be improved. We are sure that your input concerning manuals is just as important to the software author, as the reporting of bugs found, or questions about the function of the program.

In the case of Leonard's IDMI (I did it my way) /BBS program our first reports are that his manual is clear and easy to understand and that his bulletin board host program ranks above the previously available host programs provided at low cost or public domain. And as good as some very elaborate commercial programs costing several hundred dollars.

So if you want to become a local bulletin board system operator (sysop) you might take a look at Leonard Lorden's Bulletin Board Host System. We will even send you a copy of his manual to look over before deciding (\$2 please. To cover the cost of mailing).

We have added a new book to our bookshelves called "ROOKIE PROGRAMMING" by Ron Dippold, published by Computer Publishing Enterprises of San Diego, CA. 148 pgs. \$8.95 (A) S&H.

This book is a basic introduction to programming for beginners -- an introductory guide to the concepts of

programming. Newcomers to programming will learn to think like programmers, learn programming terms, and learn how to structure simple programs in BASIC, C and PASCAL. This book is unique because it stresses programming thought, structure, habits and concepts. It is not step-by-step instructions; rather, it teaches you to think like a programmer, and learn how to program. All the sample programs and exercises are presented in BASIC, C and Pascal. This makes the book an excellent resource for someone who, for example, knows how to program in BASIC, and wants to compare and contrast programming in C or Pascal.

A BIG HELLO TO:

John Cerul, of Mountain Greenery, Caves Junction, Oregon, nursery grower and wholesaler, who stopped by on a trip east last month.

And to Mr. and Mrs. John T. (Tom) Coon, a transportation Consultant from Lubbock, Texas who stopped by on their way to Alaska.

It was a very pleasant surprise to have two subscribers stop by on the same morning, one going east and one going west. A very enjoyable morning was had by all.

A BIG THANK YOU TO

John J. Smith, of Phoenix, Arizona who sent us a donation of a big box of TRS-80 related books, all in mint condition.

THANK YOU FOR YOUR PATIENCE

To all who have sent in letters requesting help and advice. We have a big stack of them that are yet unanswered, but they all will be in time. You are not forgotten.

REMINDER

If the last four digits on your mailing label are 92/07, then this is your last issue. Time to get your renewal in the mail.

Moving-Remember to send your new address.

THE SEIKOSHA SL-90 PRINTER

A REVIEW

by David Goblen

I must admit up front that the reason I bought the 24-pin SL-90 dot matrix printer was not only that it was readily available from CN80, but also I have owned the similar 9-pin Seikosha SP-2400 printer. I have been wanting to get into the 24-pin printer technology for quite a while, and when I saw that CN80 was now selling them, I jumped on it. The SL-90 is basically a 24-pin big brother of the 9-pin SP-2400, which means there was less of an adjustment period of getting used to a new printer (a new printer, no matter how much better, always tends to be a "hated" piece of machinery until you get "used" to it). They look basically alike, and all the Epson compatible printer commands recognized by the SP-2400 are also supported by the SL-90. Another reason I ordered it from CN80 is that they checked it out before sending it to me, thus I will be less likely to receive a glitched printer which must be returned to the manufacturer for repair. Still another reason (honestly, the =main= reason) was the price! No one else offers their 24-pin printers at such a low price and still provide =full= support. So what if by some chance you could purchase it at a lower price from someone else? I strongly doubt that they would willingly offer to help you free of charge after you had purchased it. Besides, most discount houses know less about their products than you do. Considering that most 24-pin printers are offered in the range of \$400 - \$600 with no support, I think you have a definite advantage with going with CN80's choice, which is offered at below \$250. Plus, they will even ensure that the printer is set up for ready operation with your TRS-80. This means you can unpack it, hook it up, and begin using it!

The SL-90 weighs in at an incredibly light 8.6 pounds. Its dimensions are also small: 15" wide by 4.8" high by 11" deep. It also comes with 9 resident character styles (fonts): Courier 10, Gothic 12, Orator, Prestige Elite, Script, OCR-A, OCR-B, S. Roman, and S. Helvetica. These can be further enhanced with a wide variety of pitch setting: 10, 12, 17, 20, and proportional. Other enhancements include italics mode, double-strike, condensed, underline, super-

and subscript, and emphasized print. Further, it comes with a 12K memory buffer. Even better, the SL-90 has exhaustive support of the Epson LQ-850 printer features, which is considered the defacto standard for 24-pin printers. As such you can be assured that your printer will be supported by all new technology which supports 24-pin printers.

Unlike 9-pin printers, which print high resolution text in 2 passes when in the near letter quality mode, the SL-90 prints near letter quality text in a single pass. This advantage is due to the spacing between the hammer pins in the printer head. In 9-pin printers, the vertical spacing between pins is 1/72". On a 24-pin printer, this space is cut down to 1/216". Thus 3 pins can fit within the 1/72" space.

The 24-pin printers were introduced as a result of the demand for higher quality printers at an affordable price. Because the focus is on high quality printed output, these new printers power up in the near letter quality mode. This is unlike the older 9-pin printers which defaulted to draft mode. With the 24-pin printers you have to switch the printer offline, select DRAFT mode, and then switch the printer back online if you want to use the draft mode (a quick 3-step operation). Another nice feature is that if the printer head begins to overheat, it automatically stops until the head cools down, and then resumes printing. This is a very rare occurrence (I've never seen it happen) but many 9-pin printer owners have burned their heads out because the printer was not smart enough to detect overheating. Because of the SL-90's ability to detect such problems, you can be assured of owning this printer for a long and trouble-free time.

Aside from full support of the 9-pin printer Epson commands (which means I can use printer drivers and graphics drivers written for 9-pin Epsoms, such as the FX-80), the SL-90 supports a whole array of new commands which Epson has designated for 24-pin printers. For example, from software you can select not only a double-wide mode, as you could with the 9-pin printers, but you can also select a double =height= mode, making each character twice as high as it normally is. You can also select character styles, which range from normal, outline,

shadow, and outline with shadow. The outline style prints the characters in a "hollow" format, in that the outline of a character is printed with a white center. The shadow style gives the effect of the character being raised, and light shining on it from its top-left, casting a shadow downward and rightward of it. Very slick. Another nifty feature is the ability to download fonts for characters codes 32 (space) through 127.

Graphics-wise, aside from all the standard 8-pin graphics modes which allowed horizontal densities from 60 dots per inch (DPI) to 240 DPI, the 24-pin printers also support 24-pin graphics modes with additional horizontal densities of 180 DPI and 360 DPI. These printers also support 24-pin versions of the old 8-pin graphics densities, such as 60, 90, and 120. Vertical spacing is also enhanced in the new printers by supporting 1/180" and 1/360" gapping.

The SL-90 has still other features with interesting possibilities. For example, aside from selecting fonts, spacing, and such, you can also set up margins and justification. These last two features would allow you to send raw data to the printer, and it would automatically set the left and right limits of the printed text, as well as justify the text; flush left (default), flush right, centered, or justified left and right. Wow, you almost have a sophisticated word processing output device here! And it could be run by a simple little program. With all the other neat built in features, such as double-height, double-width, italics, double-strike, emphasized, underlining, superscripts, subscripts, selecting between fonts and pitches, plus so many other great goodies, since all the heavy work is already in the printer, the driver program could be fairly simple.

This is a printer with some definite possibilities. It will certainly receive my full support. In fact, considering all the great word processing features built right into it from the git-go, I may just write such a text processor for use with this printer.

DOWNSIDE

All products have their down side. Few advances are made without some sacrifice of other features. The only drawback I see in

the SL-90 (and this rings true for **=all=** 24-pin printers) is that it prints slower than the 9-pin printers. This is because 24 pins must be handled instead of just 8 or 9. To program a vertical column of 24 dots for printout requires loading the print buffer with 3 bytes instead of just 1. This takes a little more time; thus slower operation is a **=natural=** result. However, the results you get from this higher density is well worth it. I think that once you see the printout between a 24-pin printer and a 9-pin printer, you will never be satisfied with the 9-pin printout. The fact is, the draft '(raw) mode prints better than some near letter quality modes on some 9-pin printers. Indeed, the near letter quality mode of a 24-pin printer is so sharp that to look at a NLQ 9-pin printout, you would think the 9-pin version was done in the draft mode. The differences are that striking!

CONCLUSION

Even though I bought this printer because the price was more than right, and it was readily available from CN80, I think that the same choice would have been made if I had compared it with other 24-pin printers (which I have indeed done after the fact). At my job I work with a variety of 24-pin printers, and have yet to see one that truly outshines the Seikosha SL-90. Also, those printers are priced in the \$500 - \$700 range. But why pay more for a printer when you can get the same quality at \$249 from CN80?

Dot matrix printer technology is quickly catching up to the laser printers. Fewer and fewer people are laughing at those who "just have a dot matrix printer" anymore. Further, more and more businesses are saving loads of money by investing in 24-pin printers rather than in "the latest and greatest" laser printer (along with their astronomical prices). This trend is becoming more apparent all the time. Why? Because the print quality of a 24-pin printer is **=very=** good and the price is hard to beat. That's smart business sense.

-David Goblen

(Editor's Note) Due to a printer update, now the SL90-Plus and a price increase we have had to raise the price on the SL-90 to \$279, but for those who act fast we may be able to fill a few orders at the old price of \$249,

while the distributors stocks last. The difference was created by the fact that the SL90 came with only one resident font and we were adding the 9 font optional card chip to the SL-90s. These cards cost us \$35 each. The new SL90-Plus printer has 9 resident fonts built-in. We were getting the SL-90 from the distributor at a very nice reduced price so they could clear their inventories for the new version of the printer, which is identical except for the built-in font card. -CN80

MY ADVENTURES WITH HARD DRIVES, PART 9.

The Great NEWDOS80 Mystery
by Roy T. Beck

Well, I did it again! Got trapped, that is, by some of Radio Shack's arcane maneuvering.

Recently, a man wanted to buy a 10 Meg hard drive for use with his NEWDOS80 V2.5 hard drive system. Note that version number carefully. Most of you probably only know NEWDOS80 V2.0. What is V2.5? In its heyday, Apparat, the publisher of NEWDOS80, offered a 10 Meg hard drive package to run under NEWDOS80, and of course their floppy disk software had to be modified to accommodate the hard drive. Version 2.5 was the result.

To further complicate things, Apparat's physical hard drive package, (which I have never seen), was inevitably somewhat different from the good old 5 Meg Radio Shack drive of the same era. And finally, to complete the cycle, Radio Shack later came out with a new version of the hard drive controller board (HDC) in their 12 Meg and larger boxes. But that's getting ahead of my story.

I promptly assembled a 10 Meg package with the new, small HDC controller and delivered it to my customer. Naturally, I formatted the drive and operated it under TRSDOS to verify the drive was good before I shipped it. Since the customer was going to use NEWDOS80, and did not intend to run TRS-DOS on the drive, I did not supply the

RSHARD driver with the drive. Since I am no expert on NEWDOS80, I made no attempt to format the drive with that DOS, although I do have a copy of it.

A few days later, the customer called me up to say the drive would not format under NEWDOS80. It was fairly clear the computer was not communicating properly with the drive. Why not? Could be cable trouble, so I had him swap external cables with another operating 5 Meg drive he already has. No improvement.

I sent him a diagnostic disk, which confirmed the drive was good and accessible under the diagnostic conditions. Grrr! I then built up another drive on my bench with the same small HDC I had shipped to him. It worked perfectly under LS-DOS, but when I attempted to format it with NEWDOS80 V2.5, I had the same problem the customer reported! My system disk was not copied from his disk, so the likelihood of a bad disk seemed remote. Now I began to think seriously. I know from my past research that the two RS HDC's are not identical. Could it be? Rather than try to disassemble NEWDOS's code, I pulled a 5 Meg hard drive off the shelf and tried that one with NEWDOS80. Success at last! I now know that NEWDOS80 V2.5 will only run on the old, large, RS HDC's. An expensive piece of knowledge, considering the manhours invested by both the customer and me, and the costs of shipping two drives to the customer, etc. etc.

To continue the story, when RS designed the new, smaller HDC, they altered the port configuration slightly.

PORT C0 contains the write protect and interrupt information and is read only.

Bits Old (Large) Board New (Small) Board

D0	INTRQ	INTRQ
D1	HDWPL	HDWPL
D2	N C	GROUND
D3	N C	GROUND
D4	WPD4	WPD4
D5	WPD3	WPD3
D6	WPD2	WPD2
D7	WPD1	WPD1

PORT C1 is a latch for some enabling lines, and can be both written and read.

D0	N C	N C
D1	N C	N C
D2	WAITEN IB	N C
D3	DEVEN	DEVEN
D4	SFTRESET	SFTRESET
D5	N C	N C
D6	N C	N C
D7	N C	N C

PORT C2 is a status port, and is read only. In the old board, D0 was pulled to +5 volts through a resistor. I am not certain about the logic in the new board, but it appears to be some sort of busy signal, and it is on bit D7.

D0	High	N C
D1	N C	N C
D2	N C	N C
D3	N C	N C
D4	N C	N C
D5	N C	N C
D6	N C	N C
D7	N C	BSY

As you can see from the above, there are some differences between the two HDC's. N C in the table indicates no connection to the bus. The deletion of the WAIT ENABLE in port C1 may be significant, but probably isn't involved in the NEWDOS80 problem. The changes in port C2 will allow the computer to know which HDC it is addressing. I don't know if this is actually done, but it is certainly possible. My guess is that the NEWDOS80 problem relates to the lack of a high on D0. If NEWDOS80 wants a high there to be sure the hard drive is present and active, this might account for the problem. So far, I don't know the answer.

In conclusion, with the old HDC, the customer was able to format the second drive without difficulty and is now happy with his new, larger hard drive.

And now I will issue a call for help! Have any of you clever hackers out there run into this problem with NEWDOS80 before, and have you generated a patch to solve it? It would be nice to be able to patch NEWDOS80 so it will run properly on the

newer, smaller HDC, or better yet, patch it to run properly on both versions of the HDC. Do I hear any offers?

-Roy T. Beck

(213) 664-5059 after 6PM Pacific Time.

2153 Cedarhurst Dr.

Los Angeles, CA 90027

(See Roy's ad in the classified section for the best buy in hard drives.)

A VISIT WITH DAVID GOBEN

by David Goben

Don't you just love it when someone calls you a couple of times to find out how to do something, you give them all the nitty-gritty details so that they will not be confused, and then you find out later they afterward wrote a whole article about it in another magazine, explaining how "they" figured that thing out, and how they "single-handedly" solved it? I am more than happy to help anyone that needs help. However, that particular person is at the top of my "too-bad-I'm-too-busy" list from now on.

LETS BAN M4 PEEKS AND POKES

In the "old" days of computing, circa 1978-1983, storing system variables at specific locations in memory by poking them in was an absolute must. This was supposed to have changed with the development of TRSDOS 6, which did not document peeks and pokes for this very reason. Technically, through the use of system service calls (also called supervisory calls -- SVCs), the programmer should be able to obtain as much information about the system and the environment as they need without resorting to peeking and poking the system. This theoretically eliminated the need to look for or place values in specific locations in memory. However, because old hackers are a hardened breed and don't shine well to change, you will often see that they quickly exploit what you can do by peeking or poking certain memory locations. True, I have been guilty of this as well, but I have always included the disclaimer that this peek or poke will work only with such-and-such version of the operating

system, or what versions it will work on altogether.

Sadly, one of the biggest reasons why LS-DOS 6.3.x did not have as many enhancements as it certainly could have had over TRSDOS 6.2.x was that so many people were using peeks and pokes, that to change the base memory locations too much would cause such peeks and pokes to potentially raise havoc with the system, because what memory location they assume something to be at is no longer its memory location. Unfortunately most of these hackers do not tell the unsuspecting public that a peek or poke may not work with a successive or previous version of a system, and so it is left to the user to try it (usually in blind innocence) and hope their system does not crash.

If by some miracle the TRS-80 line is revived, such as the introduction of a new replacement computer (with lots of current technology goodies to be thrown in), I hope that an operating system designed for it will not be held back by such peeks and pokes. I would vote that the new system ignore such restrictions and be allowed to be designed around compatibility with the previous version of the DOS, but not to renegade peeks and pokes. This way a new operating system will be allowed to truly shine, even though many programs which broke the rules will no longer run. This would call for every hacker to reach into their bag of tricks to provide patches to their programs to conform with the new standard, or be left behind. There are certainly enough programmers out there who can provide great new versions of programs for a new system, and perhaps to find patches to make old unruly programs that are no longer supported by their manufacturer (vintage-ware) work.

VIDEO HINTS

Anyway, I was talking with such a hacker recently, who justified his case for peeks and pokes by bringing up the example of figuring out video modes. He stated that without direct peeking at certain memory locations, a program does not have any way of knowing if the video was in the double-wide mode, or if the alternate character set was selected or not. I was at a loss until I remembered that the Technical Reference Manual stated that a read (input)

from port 255 (FF hex) provided this information.

By reading port 255, bit 5 is set if video wait states are enabled. Bit 4 is set if the external I/O bus is enabled. Bit 3 is set if the alternate character set is enabled. And bit 2 is set if the video is in the double-wide mode. Bit 5 corresponds to a value of 32. Bit 4 to 16. Bit 3 to 8. Bit 2 to 4. By reading the port and ANDing the bit value to the read value, if a bit is set then the logical result is non-zero. For example, if from BASIC you enter `D=INP(255)`, variable D will contain the value stored in port 255. If you AND 32 to the value, such as `V = D AND 32`. V will be zero if the bit is not set, and non-zero if the bit is set.

This information also applied to the Model III.

R/S HIRES BOARD

I was recently asked about an incomplete instruction in an old 80 MICRO magazine which told the reader to make a modification to the Radio Shack Hi-Res board before installing it on a gate-array Model 4P. The problem was that the instructions on where to connect one end of a jumper was missing. The answer is simply to ignore the instruction. The R/S board will work on both old and new versions of the Model 4P without any modifications. In fact, When The Misosys Quarterly republished the article, they even cut the section concerning the Hi-Res installation completely out. I have an R/S board which I have placed on several different machines, both gate-array and non-gate-array, and have never had a bit of trouble with it. If anyone has more updated information, please let me know through CN80.

SQUASHED CIRCLES

One of CN80's overseas readers recently complained that when he tried using the HRFXPRT/CMD utility in my HI-RES UTILITIES PACKAGE that a perfectly round circle displayed on the Hi-Res screen would appear oval on HRFXPRT's printer output, which he demonstrated with a provided sample printout. He also included a sample of a printout from a program a friend of his wrote which printed the circle in more correct proportions. From a quick examination of the samples, it is obvious that his friend's screen-dump program

printed each row of dots twice, the same as is always done by the programs Tandy provided in their Hi-Res package for the DMP printers. Had this person read the documentation provided with HRFXPRT more carefully, he would have found that HRFXPRT includes a parameter called DOUBLE. Using the DOUBLE parameter will cause the printout to be displayed in proper proportions. The reason my HRFXPRT program does not double-print screen dumps automatically as some programs do is that a great number of hi-res files are already stored in a format that when printed will seem much too tall if its lines are printed twice. Printing them once will correct their proportions. One can spot these easily by simply noting the proportions displayed on the Hi-Res screen. If the picture on the screen appears tall, then they are specifically designed for a single-row print, rather than double.

One must remember that currently the hi-res screen is defined as having 640 horizontal dots by 240 vertical dots. This equals out to an 8 x 10 dot cell for a single text character, with a horizontal pitch of about 85 dots per inch and a vertical pitch of about 41 dots per inch. A typical dot matrix printer sends its output in an 8 x 8 cell, but the horizontal pitch is usually by default 120 dots per inch, while the vertical pitch is 72 dots per inch. What this boils down to is that a "one-for-one" dump of hi-res screen data will be printed with much less vertical pitch than shown on the video screen. The usual cure for pictures that appear "normal" on the screen has been to print the horizontal rows twice, doubling the height and somewhat correcting the differences in proportions.

Speaking of the Hi-Res utilities, I'm working on still another program to take advantage of the 360 x 360 capability of the 24-pin printers.

Also, the printer dump programs provided in this package do not actually require that a Hi-Res board be installed on the computer as long as you specify a hi-res file on the command line when you invoke the printer utilities. This way you can "try out" hi-res before investing in a board.

PRINTER SOFT FONTS

Soft fonts for 24-pin printers is coming

closer to being a reality. I'm currently defining a standard for font files, which is much more of a consuming process than what most people envision, because if such a format actually becomes standard, then future implementations are usually locked into that standard. Once this is done, I can proceed at producing the font files and downloading utilities. Bear in mind that designing fonts is a very exhaustive and involved process. So don't expect to be flooded by a rush of new fonts, unless you want to start designing some yourself. The first trick is to design a font compiler. I have it outlined, and don't expect much trouble in programming it. Now if I could just find enough time to do it.

FBACKUP EXITS

A reader wrote asking how to keep FBACKUP from aborting JCL files when no files are found to be backed up. This might be handy when backing up a hard disk from several partitions. A JCL file could automate the process for those who are less knowledgeable about DOS commands on their computers. This most often happens when one wants to back up only files that have been modified, or those that have a certain date range. If none are found to match the specifications, FBACKUP reports that there are no files to back up, and aborts to DOS. A way around this is to patch the error exit routine so that a DOS abort will =not= occur.

For Model 4 FBACKUP version 1.3, the patch is:

```
patch fbackup (d08,d5=00 00:F08,d5=ff ff)
```

This will cause JCL processing to continue without an abort.

C INSTEAD OF CCC

Another reader recently asked how to patch Mark Reed's EDIT4 program so that an extension of C can be used instead of the default CCC, which is used by the MISOSYS C compiler. This person is using the Alcor C package, which used a simple C extension.

Normally a person should contact the author of a program for a patch, but in this case I reply because I have already applied such a patch for use with the Small C package I am developing.

Were it simply just patching the text C over the top of CCC in the program, all would be simple, but this is not the case. EDIT4, like most programs, uses a system supervisory call (SVC) called @FEXT which adds a programmer-specified default extension to a file if one does not already exist. @FEXT expects the file extension to be 3 characters long, not 1 or 2. Also, the programmer **=must=** provide the SVC with a 3-character field. This is ok unless you also have drive numbers or passwords which will follow the extension. By having less than 3 characters, space is introduced between the new extension and any following data. This results in files not being saved where maybe they should, or program protection removed when it is needed.

The solution is to add the extension, and then screen out any blank spaces in the filename. Following is an assembly language solution to the problem:

```
;sample code that will use new routine
LD HL,EXT$
LD DE,FCB ;file control block
CALL FEXT
RET
EXT$:
DB 'C ' ;"C" with 2 spaces
;
;extension routine
FEXT:
SVC @FEXT ;add extension
PUSH DE ;save copy of FCB
LD H,D ;copy DE to HL
LD L,E
LOOP:
LD A,(HL) ;get sample
INC HL
LD (DE),A ;save it
CP 14
JR NC,$+4
POP DE ;clear stack
RET
;
CP ' ' ;space?
JR Z,LOOP ;yes; ignore
INC DE ;else keep
JR LOOP
```

This routine will add the file extension, then filter out any spaces. This packs the program down to the format the user should want it. This will work with 2-character extensions just as well.

To patch EDIT4 requires that you BUILD a file called E4/FIX. To do this, from the LS-DOS ready prompt, enter BUILD E4/FIX. Next, type in the following lines:

.Patch E4/CMD (EDIT-4) for 1-character
'C' extension. David Goben

.patch using PATCH E4 E4

```
.
D04,03=CD 00 26;F04,03=3E 4F EF
D17,7D=20 20;F17,7D=43 43
D17,FC=20 20;F17,FC=43 43
X'2600'=3E 4F EF D5 E5 62 6B 7E 23 FE 20
X'260B'=28 FA 12 13 FE 20 30 F4 E1 D1 C9
.eop
```

Once done, press the BREAK key to exit the build command. Now apply the patch by entering PATCH E4 E4. And there you have it.

DISKDISK, SUBDISK

Off and on you have heard me sing praise of DiskDISK (called SubDISK on MisoSys' hard disk driver software). These things are almost indispensable utilities on hard disk installations. The reason is quite simple. When you have a partition which is anywhere from 5 to 10 megabytes in length, you are more likely to run out of filename space long before you run out of disk space.

The directory structure used by LDOS, TRSDOS 6 and LS-DOS 6 provides for a maximum of 256 files. Two of these files, BOOT/SYS and DIR/SYS, must always be on the disk, so this drops down the number of files available to the user to 254. If the disk is a system disk, then also subtract 14 more to allow for the system files, resulting in 240 available files. These filenames are stored in the directory in 32-byte blocks. 256 blocks constitutes 8192 bytes, or 32 disk sectors (a disk sector consists of 256 bytes). Add to this length a sector for the directory's disk space allocation table and another sector for file indexing, and you have a directory that has a maximum length of 34 sectors. Of course, if you have a single-sided disk, the directory length is cut down to 18 sectors, thus limiting you to 16 sectors for file storage, or 128 =total= files.

DiskDISK broke this boundary limitation by creating another "disk" right on a hard disk partition, so that when this sub-disk is open, you can store more files in a hard disk

partition, because you are using a new, clear directory.

The down side of this process is that you must also pre-allocate space for the DiskDISK which is equivalent to the size of the DiskDISK you created. For example, if you created a DiskDISK that simulated a 2-sided 80-cylinder disk (with 18 sectors to a "side"), this means that you must reserve 2 x 18 x 80 sectors of disk space; a total of 2880 sectors, or 720K. To save space, you should only create the DiskDISK to the size you need, which can be done when you select format, side counts, and cylinder counts. The problem here is that you cannot always anticipate exactly how much space you will require. Chances are you, like me, will select too little or too much.

Another problem is that if you swap drives, and one of the drives you swapped was a partition which an active DiskDISK is on, the system will get confused and bomb on you. Thus you should never open up a DiskDISK until you have drives swapped and set up the way you want it.

But by watching out for such minor problems as these, the DiskDISK utility will serve you well.

NEW LS-DOS SUBDIRECTORIES

The reason I spoke of the previous subject at length is that quite some time ago I had discussed the possibility of creating a brand new (at least to LS-DOS) directory structure I call =subdirectories= on a disk with those who are considered most intimately knowledgeable about the DOS. My thought was that instead of pre-allocating all that space to a pseudo-disk, why not just create separate directories which can be accessed when needed? The only requirement is that they would have to share the same disk space allocation table. This way programs from different directories could co-exist on the very same disk, though inaccessible except through their respective directories, and no additional space needs to be preallocated, except for the new directory, which has a maximum length of 34 sectors (technically, a subdirectory will have exactly the same length the disk's original directory, so that the allocation tables won't conflict with each other). The beauty of this format would be that files could co-exist on the disk without requiring massive blocks

set aside for additional directories as is the requirement of DiskDISK. All the free disk space would be available to any and all subdirectories, and only a small amount of space needed to store the individual subdirectory files would have to be set aside. This, I thought, would be the perfect solution to freeing up the space on a disk.

An additional advantage of such a structure is that subdirectories could easily be accommodated not only on hard disks, but on floppy disks as well, which was something quite impractical before, except if the DiskDISK files were very small. By eliminating the need for large blocks being set aside as is needed by DiskDISK, plenty of space is available for all directories.

The list of advantages to such a system are extensive. For example, you could devote each subdirectory to a particular "class" of files or programs (class meaning "those that are related"). Further, such a system would even allow you to create subdirectories =within= subdirectories. Thus you could have one subdirectory set aside for, say, C programming. Within that subdirectory you would have all the tools stored for programming. In a subdirectory =within= that subdirectory you could have the data files used by the C programs. The fact is that such subdirectories could go quite deep, so that having subdirectories extending within other subdirectories to any level would be no problem at all.

This grand idea was immediately pooh-poohed by those gurus (names are withheld to protect them from embarrassment), and I was quickly given a half dozen reasons why such a concept is impossible considering the current DOS structure. It was a nice idea, but they said it just would not work.

Well, WRONG, guys. Because I just did the so-called "impossible". I have now developed such a structure and it works =beautifully=!

I have created a program called MKDIR/CMD which will create a subdirectory on a disk. Another program call CHDIR/CMD will activate a subdirectory and assign a logical drive number to the subdirectory. You can even specify a subdirectory which is embedded within another subdirectory from a single

invocation.

For example, suppose that on the disk in Drive :2 I had a SubDirectory called BCX, devoted to my BCX spreadsheet program. Within BCX I have another subdirectory called BCXFILES, which contains all my BCX data files. I could activate access to BCXFILES on logical drive :6 by entering:

```
CHDIR :6 BCX\BCXFILES:2
```

or even

```
CHDIR 6 \BCX\BCXFILES
```

Note that the leading colon on the logical drive designator is optional, as is the leading backslash in front of BCX. The backslash '\' is considered a SubDirectory separator by CHDIR. The BCX SubDirectory is actually called BCX/DIR, and BCXFILES is called BCXFILES/DIR ("/DIR" is a default extension -- specify your own if you prefer). In the second example, CHDIR will search for BCX/DIR on the first available drive, and continue processing from that drive. In the first example it goes directly to drive :2.

The SubDirectory programs should be available for sale through CN80 before the next issue comes out.

Of course, as with any system, all is not roses. There are always tradeoffs. For example, what if you accidentally purged or removed a subdirectory? To combat that, my popular UNREMOVE/CMD program will be included in the package. This way you can quickly recover not only accidentally killed subdirectories, but also any other files you may have oopsed into oblivion.

Another caveat is backing up a subdirectory to another disk. Backing up the subdirectory will not back up the files. In that light, I would enhance FBACKUP and FASTBACK to accommodate these type files if enough interest is generated. Until then, you will have to activate each subdirectory and back up their contents.

Another problem was swapping files. This very same problem also troubles DiskDISK. I solved it by writing a new version of my SWAP/CMD program which will check for active subdirectories, and handle them

without a hitch. This program will also be included in the package. This way you can easily swap logical disk drives, to include changing system drives, without fear of crashing an active subdirectory.

NEW 4DOS ON THE HORIZON?

I suppose the best solution would be to write a totally new DOS, which, while being backward compatible to the current DOS structure, it would also incorporate full support for new concepts such as subdirectories and handle them transparently to the user and with full committed support. I have already outlined such a new DOS system, but have not yet started on it because I don't know how much interest on your part there would be for such a system. The enhancements I've developed (of which subdirectories are only a small part) are quite extensive, to include built-in screen windowing, mouse support, graphics support, built-in command line editing for mistyped commands, at least 16 on-line logical drives, plus a new simple method of managing up to 256 open files through a thing called file handles, file search path and specialized environment specifications, user-defined placeholder variables programs designed to take advantage of them can access, system and device stream I/O that will curl your toes, and extended memory management that will make extended memory not just a nice "added" feature, but an absolutely =essential= part of your system. To be practical to the new user, I think that a DOS shell program that allows the user to select command and programs (and help) from a series of easy to use screen menus is essential (no doubt do be done interactively with a mouse), so such a product would be made available to accompany the DOS. The list goes on and on and on (and maybe you could even add to it by sending any ideas you have to me in care of CN80). And this is only the edge of the iceberg. But like I said; I've already developed all these ideas, but how many of you would really want it?

With that in mind, until next time: HAPPY COMPUTING!

-David Goblen



Hardware Corner

Cables for floppy disk drives.
by The CN80 Staff

Model 4 and 4P Gate Array and Non-Gate Array Cable requirements.

Original floppy disk drives in the TRS-80 Model 4 and 4P computers did not have shunt blocks (sometimes called short blocks, or jumpers). The drive select was controlled by the pins being pulled from the floppy disk drive cable connectors.

In the Listing section we have printed easy to follow diagrams of the connectors with the pins missing for each machine.

If you are installing *only one new drive* and leaving one of the original Radio Shack drives in place you would have to remove the pins from the cable as shown for the connector attached to the original drive.

Model 4D computers which were manufactured with double-sided drives have cables that have all the pins in place.

All new drives require that all the pins be in place, and the drive select is controlled by moving the shunt block.

For example if you are installing a new drive in drive ONE, and leaving the original drive in drive ZERO, you would need a connector on the cable that has all its pins for drive ONE, and a connector with the pins pulled for drive ZERO.

CN80 can provide these special cables, if you inform us of the location of each new drive and each old drive.

There are also two types of connectors required to connect the drives to the Main CPU Board. The Model 4 Gate Array Computers require a 34 Pin Socket Connector.

Model 4 NON-GATE ARRAY computers (computers with two or three separate control boards mounted within the aluminum shield) have a separate floppy disk controller board and require an edge card type of connector.

If you receive the wrong cable with your

order, we will be happy to exchange it for you at no charge, except for an additional \$4 to cover the second shipping costs. Just tell us which computer you have:

Model Number:

Gate Array or Non-Gate Array:

New drives installed in drive location:

Original drive installed in drive location:

If you are installing new drives in both drive zero and one, you can sometimes turn the the original cable over as it does have all the pins in place from pin one through pin 33. This places the row of pins that have some pins pulled on the bottom side of the drive edge card which is the common side. And the row 1 through 33 on the top side of the drive marked 2 through 34. But two things have be to your favor to do this. First, the cable must be long enough to be twisted over and still reach the connections. Second, the drive must have its edge card connector fingers 1 through 33 tied together on the board so as to provide a common path to each of the circuits 1 through 33. Most new and older drives were constructed this way, but we can't be sure that they all were. And in most cases the original cable that Tandy installed will not have even an extra pennies worth of slack. We construct all of our cables with at least two or more inches in length to aid in the ease of installation. Plus a copy of these instructions will be packaged with each drive order.

THE NEWCOMERS CORNER

For Novices, Beginners, and First Time TRS-80 Users. Part 9

(The first eight parts of the Newcomers Corner has been collected and reprinted in a complete volume. \$7.95 includes S&H.)

WHAT IS ASCII?

You will find many references to ASCII throughout CN80, and our often request that articles and files submitted to CN80 be placed on a disk in ASCII. But there are

many who are not familiar with the term and its application. So we will briefly try to explain it.

ASCII is a standard code for representing characters as binary numbers. It is used by most computers, and therefore is the easiest way to transfer data files between various kinds of computers, or transfer text files from one application file to another.

ASCII, which stands for American Standard Code for Information Interchange and is a standard code for representing characters as binary numbers. We won't at this setting get into the bits and bytes of binary code, except to say that it is the language that computers understand. Because computers can not understand human language such as "come here" or "get this" or "do that". All our instructions typed into the computer via the keyboard, or sent from a stored file must be translated into binary code for the computer to understand and act on it.

Each printable character is given a decimal code number and a hexadecimal code number which most computer systems convert into the appropriate binary code assigned to each printable character. You will find this code represented by charts in many places, under the title "ASCII Character Set". In the TRSDOS Version 6 Disk System Owner's Manual it is found on A-45 of the appendices section. There are also codes assigned for such controls as carriage return, interrupt program, backspace key, and etc.

As a user you won't have much need to have any knowledge of the decimal and hexadecimal codes unless you plan on doing programming on your own. But you should be aware of what ASCII is all about to be able to apply it in your daily computing.

Ok, so now how do you apply ASCII?

You will read in many articles about a text or BASIC file being stored in ASCII. What this means is that the data instead of being stored in a file on a disk using the format designed for use by the application program only, the data in the file created is stored in the ASCII format.

As you have probably experienced, data files created by one program can not be read by

another program. That is because each application file has its own data storage formula so it can read the files it has created and other programs can not read it.

There are exceptions to this rule, such as some word processor programs do store their data in an ASCII format. Allwrite and Lscript being some that do this. Other programs have special commands that you can use to store the data created by it in a file in the ASCII format.

This is where the user usually becomes confused when they want to know "Just what do I need to tell my SuperSuperDuper application file to store the data in an ASCII file rather than in its own format?" This when you need to read the manual that came with the program and find its instructions on how to save a file in ASCII.

Here are some examples:

BASIC

If you are saving a file that you have written while using BASIC you would normally write:

SAVE "filename/ext:dr" <ENTER>

and the Basic Program will save the file in a format that is not the ASCII format.

If you want to save the BASIC file in the ASCII format then you would type:

SAVE "filename/ext:dr",A <ENTER>

by adding the comma and the A to your command you tell the BASIC program to store your file in the ASCII format.

SUPERSCRIPTSIT

SuperScriptit has a menu command line that will convert your file text after it is stored by SuperScriptit to an ASCII file format. When you first open SuperScriptit use the A menu prompt line and follow the instructions that come up on the screen.

SCRIPTSIT PRO

Scriptsit Pro also has a method of saving a text file in the ASCII format, instead of the special Scriptsit Pro codes and formats.

With Scriptsit Pro you use the block action command and after marking the block or

entire text you enter the File option, when this is done it will ask you for a new file name and then it will ask you if you want it stored in Scripsit or ASCII.

Other programs such as Visicalc, pfsFile, BCX, and others use a slightly different method of storing their data files in ASCII. With these programs you PRINT your file to a disk file instead of to the printer.

VISICALC

Using the /PF Visicalc command will send the image of the worksheet to a diskette file that you name at the proper prompt. The data will be stored in the ASCII format on a disk instead of being sent to your printer.

BCX

You also use the /PF command in the same way as you would in Visicalc.

PFSFILE

With this program you enter item 5 on the main menu screen to print as usual. When the print option menu comes up you type in your filename over the *PR in that menu. This will print your file to a disk file in the ASCII format under whatever filename you have chosen.

One thing to remember is that an ASCII file will take up more storage space than a file created by various application programs. Because of the additional storage space taken up by ASCII files, the ASCII format is not the first choice of programmers in storing data files. But understanding ASCII is important when you have to transport data and text files between computers or through a modem.

Suppose you want to send a copy of your text to a friend who does not have the same program or word processor that you do. Then save your data or text in ASCII and place just the ASCII file on a disk and send it to them. It is illegal to send a complete copy of the disk that you created the file with because it will have the copyrighted application and system files on it too. Besides he may not know how to use the program that you have left on the disk. Send the disk with just your data or text saved in ASCII on it, and your friend will be able to read your disk files, using his own programs that he is familiar with.

Now that you have had an introduction into the use of ASCII saved files, you will also understand why CN80 requests files sent to us be stored in ASCII.

SENDING FILES BETWEEN TWO COMPUTERS.

Nothing could be easier. All you need do is have your two computers connected together with a null modem cable connected between the two, plugged into the RS232 port on your computers and a communication package in each computer with which to send and receive the signals being sent. (Has anyone noticed that we carry these null modem cables? \$9.95 Check the product guide.) But more on this next month.

HI-RESOLUTION: RAPIDYNAMIC GAMES

by Gary W. Shanafelt

Last time, after saying something about the two high resolution boards available for the Model 4, and the two versions of BASIC -- GBASIC and BASICG -- that came with them, I promised future articles reviewing hi-res software.

You should know right off the bat that there's a lot less software around for hi-res than for normal TRS-80's, for the simple reason that only a small number of people bought the optional board and so there was a smaller potential market for software to begin with. And a lot of it consists of short BASIC programs that draw a simple design on the screen, the sort of demos that were real big on the first Model I's when people were trying to figure out what a computer could do, but which were soon superceded by more sophisticated software. This said, though, there are also some fairly complex programs. A lot is freeware, and can be obtained from The File Cabinet through this publication. You can order a printed catalog to get a listing of what is available, then order individual disks from there. The more complex programs are generally -- though not always -- commercial (meaning they cost more money: you get what you pay for).

As a rough summary, I'd say the available programs fall in several categories. The

biggest consists of the graphics/drawing programs, which means programs to create images on the screen or to convert images from other computers for viewing. There are a number of plotting/math programs, which plot mathematical formulas in hi-res or create fractal images. Not many business programs seem to have been written for the hi-res board. Micro Labs advertises a General Accounting program and also sells software which plots hi-res graphs from Visicalc data. Finally, there are the games produced by Rapidynamic Software. The Rapidynamic programs are almost in a category by themselves. It is these programs (or at least the ones that I'm familiar with) that I want to review in this issue.

The Rapidynamic programs have a number of things in common. One is their generally high quality. They take full advantage of the hi-res board and are written in machine language, not BASIC. Though marketed by MicroLabs, they will run on both the MicroLabs and the Radio Shack boards. Second, they come on disks with their own operating system, Rapidos. The Model 4 versions use the same disk format as TRSDOS6/LSDOS, but the DOS has its own routines which the programs call. If you try to run them with any other DOS, they will crash. Further, Rapidos supports only single-sided disks, so you can't transfer the programs to double-sided floppies or a hard drive. The disks are, in fact, sort of like the old Model 3 self-booting games, except that they are not copy protected.

I mentioned high quality. Easily the top Rapidos program, and one of the top TRS-80 games in general, is Tournament Chess. Not being a very gifted chess player, I can't comment on the intelligence of the game; I have never beaten it except at level zero. But it must be challenging to the experts as well. A friend once wrote me that people he knew with hi-res boards did little with them except play Tournament Chess. The game has almost any option you would want, from timed moves, levels of difficulty, loading/saving games, switching sides, automatic play, game history, customizing the board, etc. If you can't remember all that, it also has a built-in help menu which will display all the commands whenever you want them. The hi-res display is stunning, at least if you've seen what chess pieces look like in low-resolution TRS-80 games. An

especially nice touch is movement of the pieces. Most TRS-80 chess games I've seen require you to type in coordinates to move a piece: square A2 to B4. Tournament chess uses the cursor keys (or joystick if you have one). You move the cursor to the piece you want to move, "hook" it by hitting the space bar, then move it to your desired space and finally release it with another tap on the space bar. There is no need to constantly rack your brains trying to calculate the board coordinates, which makes a real difference in the amount of enjoyment you can derive from playing the game.

Rapidynamic Software offers three other games with the same general features and interface of Tournament Chess, though none with the same level of playing complexity: Tournament Reversi, Match Play Backgammen, and 3D Tic-Tac-Toe. As with the chess game, these are all outstanding quality programs. They give you a real challenge, not just fancy graphics combined with essentially insipid gaming. (When you order a game, you also get a low-resolution version with the same commands but minus the stunning graphics -- so if you don't yet have a hi-res board, you can still enjoy the game).

I'd like to mention one other Rapidynamic program here, though it is not a game. It is Surface Plot II. It creates surface plots (obviously) of the sort that used to be shown on hi-res screens in computer catalogs before people could afford images made from scanners. These are flat surfaces with hills or peaks jutting out of them, a grid of lines making them appear three dimensional. Some can be quite stunning. If you need these for mathematics or engineering use, this is the TRS-80 program that will create them for you. You can either print the finished images or save them to disk in standard hi-res HR format (I'll explain that in a later article) for editing with your favorite drawing program. Being neither a mathematician nor an engineer, I find Surface Plot II facinating simply because of the intricate designs it can create on the screen.

As I said above, all the Rapidynamic programs are marketed commercially by MicroLabs of Dallas which, incidentally, has the largest offering of commercial hi-res programs. Write to them for their program

listing and be sure to mention that you read about them here.

-Gary W. Shanafelt

(Note) Micro-Labs Grafyx Solution Hi-Resolution Graphics Board, Micro-Labs Hi-Resolution programs and the Draw Program are distributed by CN80.

For other programs by Micro-Labs contact:
Micro-Labs, Inc.
7309 Campbell Road
Dallas, TX 75248
(214) 702-8654

Gary has sent a disk with some very nice HR files on it, which were created with Frank Slinkman's GIF program. We have placed some of them in the listing pages to give you an idea of what can be accomplished with High Resolution programs. This collection of files will be place in the File Cabinet HiRes Library.

Others who have created HR files are welcome to send them in too. We always need fresh material, especially when it is superior quality like this.

LOTTO BASIC PROGRAM

by W. Barry Knight

I was stimulated to write the attached program, LOTTO/BAS, (see 'program listing number one) by a situation which occurred toward the end of February of this year right here in my home state of Virginia. You may have heard that the first prize of \$20+ million, in that Pick-Six-Out-of-44 was won by an Australian syndicate which made the simple observation that, since there were only 7,059,052 possible combinations, it might be worthwhile to buy one one-dollar ticket on every combination. I say "might" because enough multiple winners could reduce the prize to each winner below the value necessary for profit. Well, it turned out that the syndicate was unable, because of logistic problems, to buy more than about five million tickets. Even so, one of those was the winner, and the sole winner. Thus the Australian strategy was successful, although the rules in Virginia, and perhaps

in other states too, have been changed to make illegal a future attempt along the same line whenever multiple drawings, which increase the prize money, are required to produce a winner, and thus invite another attempt to buy "one of each".

This LOTTO/BAS program will handle any pick-six situation, and asks only that the operator supply the number (44 in VA, 46 in NJ, 49 in CA, etc.) over whose range the set of six is to be selected. It will then supply, in numerical order, a random selection of six numbers. It will repeat this process as many times as desired. It will then, on request, display the number of possible combinations with up to six winning numbers, and give the chances of hitting each combination. The program states, and I would like to re-emphasize, that the set(s) of random numbers it provides is no more likely to include winners than any other set, however produced.

The arithmetic is simpler than some will imagine, as this example may establish. Suppose that the range is 50; in other words, the player selects a set of six different numbers, all between one and fifty, inclusive. Suppose that the questions arises: "what is the probability of selecting six correct numbers?". Imagine that there are fifty balls in an urn, all differently numbered from one to fifty. The urn obviously contains six "good" numbers and 44 "undesirable" numbers. The player draws from the urn six times, retaining (not returning to the urn) each ball withdrawn. Her/his chances of hitting a "good" number on the first draw is clearly 6 in fifty, or the fraction 6/50. Suppose the outcome is "favorable", i.e., the player extracts a "good" ball. S/he draws a second time. Now the probability of success of 5 out of 49, or the fraction 5/49, since there are only five "good" balls left in a total of 49. Again there is success. On the third draw, the probability of a successful outcome is four out of 48, or 4/48. Assuming a success in each draw, the probabilities continue as 3/47, 2/46, and finally, 1/45. The probability of six consecutive successes is simply the product, or:

$$(6/50)*(5/49)*(4/48)*(3/47)*(2/46)*(1/45)$$

which the computer evaluates as the fraction whose numerator (top) is one, and

whole denominator (bottom) is 1.58907E+07. To put it another way, there are over 15 million combinations, of which only one has all six correct numbers.

Exactly this same procedure can be followed in calculating the probability of drawing no correct balls at all. This time there are 44 "good" balls in a total of 50. The probability of consecutively successful draws is the product of 44/50, 43/49, 42/48, 41/47, 40/46, and 39/45.

The calculation of the probabilities of a number of correct balls which lie between six and zero is a little more complex, but follows the same line of reasoning.

The program contains no traps, so please play fair with it, and supply integral, positive numbers.

I would be happy to supply further details as requested.

-W. Barry Knight

M AND D BASIC PROGRAM

by Robert M. Knowles

CN80 magazine came today and I found my divide and multiply program there, that's very encouraging, it makes me feel that I must have done some thing right and if some one did what I said they now have a four part program and a perfect place to learn about menus, how they work and how to put them in.

I did the whole program (Listing #2) so I know it works. I've started you and with a little thought you can make a very nice menu but just so you wont have to much trouble I had better say a few words about how to get started.

Call up the M and D program and renumber it, move it down to 200, when you finish you can always renumber the whole program. New programers, until they get used to it sometimes overwrite what they are trying to add to. Then they have some very unkind words to say about a computer that would do a thing like that. Look at what I wrote, study it, think about how it

might work. Compare it with the M and D program, see the changes and how they work, then when you think you understand it put in just the changes. It's easy to see how the program works until you come to the gosub line then it can be a little hard to see how it works, but if you know, then there will be no problem. The gosub line is tied to the menu. If you press one then it goes to the first number in the gosub line but if you press two it will go to the second number so its important that you put the start line of your first program in the first place on the gosub line. The second in the second place and that's how that goes.

Don't miss the line that says IF A=0 GOTO 20, it's very important. It's what makes your program go back to the menu so that if you need another program you can choose it but if you are done then press break.

-Robert Knowles

Hints and Tips

You should always keep a backup copy of your data disks, and the best way to do this is to BACKUP working data disk several times while you are adding new data to it. Or use FBACKUP which is much faster, and it will not remove any files that are already on your backup disk which are not on your working source disk.

While constructing CN80 (on the Model4 of course) we dump the files being stored on drive one several times during the day to two backup disks, one in drive 2 which is 5.25" and one in drive 3 which is a 3.5" disk.

The real tip is; if you have more than two drives it makes it really easy to exit your program and do the FBACKUP and then return to the program and continue to write data to the disk in drive one.

Do not leave your backup disks in drive two or drive three while you are processing data to drive one. The reason: If you use a program like Scripsit Pro as we do, or any other program that searches for and updates the first data file on the first disk it finds. Should your drive one develop problems, or just miss finding your file due to directory

problems, you could be updating the file in drive two or three without realizing it. Then thinking that you have placed updated material in the data file in drive one, do your FBACKUP (or BACKUP which is much slower) :1 :2, and overwrite the file that was updated in the last work period. Notice we refer to it as a "work period" and not a work session. A work session generally is related to the time you sit down at the computer until the time you get up and leave, whereas a work period suggests a length of time within a work session. The time it takes to exit a program and do a FBACKUP of your working data disk several times within a working hour or two is very small compared to the loss of an hour or two of creating and storing information.

-CN80

Formatting a 3.5" disk.

Remember that a 3.5" 720K disk is double sided 80 TRACK, so when you are formatting this disk you need to answer your format prompt questions with 2 sided, double density, 80 track. Otherwise you will format the 3.5" disk with 40 tracks and get no more space than you do when you format a 5.25" 360K. Again if you are using FFORMAT which is faster than the DOS format, you can add the parameter (BIG) FFORMAT :n (BIG)

(:n, being the drive number to be formatted.)

and it will automatically tell the computer to format the disk in 80 track. Or you can still answer the FFORMAT menu prompt question with 80.

-CN80

One nice thing with using the TRSDOS (now LS-DOS) is that the DOS will search all drives in the system till it finds the file that you are looking for. With MS-DOS systems you have to know where your file is at and be in, or is it on, the drive where the file is at, or the computer will not find it and give you nothing but error messages. At least the Model 4 will search for it on all drives, 0, 1, 2, 3, 4, and 5. Four and five are hard drive partitions. Only if the file is not on any of these disk locations, or if I have miss typed it will the computer will tell me that the file can not be found.

-R.M.A. Canoga Park, CA

Send your hint and tips in. We all need all the help we can get. Your hint or tip may be the gold mine solution for someone else.

OPEN FORUM

Q: Can you explain the terms "expanded memory and extended memory" which to me are very confusing? And what is the FAT table?

-R. M. A. Conaga Park, CA.

A: Expanded memory is a term that is not usually associated with the TRS-80 computers in the sense that it is used in the IBM world. But for the TRS-80 the reference is for a 64K machine expanded to 128K of memory. For the IBM machines Expanded Memory is a hardware and software standard that allows DOS programs to access extra memory.

Extended memory in the IBM world is directly accessible at addresses higher than one megabyte.

As an example, the RS catalogs always advertised the computers as a "Model 4 64K memory expandable to 128K." To do this you add eight extra memory chips (Plus a PAL chip for the non-gate array Model 4s) to give you an added memory bank of 64K. This additional 64K of memory is not accessible directly from the DOS level, but requires additional program techniques like MEMDISK that do access the additional 64K memory which can then be used as an additional disk drive location. There are programs written that do require that you have at least 128K memory. These programs have built within their structure the commands that bridge the gap between your original 64K and the added 64K memory banks.

FAT stands for [File Allocation Table] which is the disk operating system's method of storing and keeping track of files on a disk. It also keeps track of the amount of unused storage space on a disk.

A: M. R. C of Berkley CA wanted a smaller BASIC. I use the MultiDOS version ??? basic with LDOS. Since the tokens are different, save MultiDOS's BASIC program in ASCII, load it in, then save it with the MultiDOS tokens. This version offers about 4k more useable space. On the other hand, it lacks many of the CMD"? functions such as CMD "O". Don't use any LDSOS utility in Basic such as CMD "FORMAT/CMD". I am just warning you that it is a good, fast, compact interpreted basic with some features not found in LBASIC. The MultiDOS basic will run 99% of the LBASIC programs without a hitch as long as it was first transversed through the ASCII format.

Mr. DeRidder wanted to know if he could use the Model 4 cassette port. Remember that a Model 4 is also a Model III too (I use the III mode more than than 95% of the time). As such you could run Model III cassette programs. Many can be brought over to the disk to be used also in the III mode. It also is almost useless in the Model 4 native mode, except some programs port their sound or music out the cassette port so that they may be heard through a decent stereo system instead of the 1/2" Mickey Mouse speaker in the 4.
-R. L. H. Albion NY

Q: Enclosed find my check for a years's renewal to your great publication..... Thanks for all the good information that comes via my mail box around the first week of each month.

I have a question for your Open Forum section. It's that I would like to know the extent to which Deskmate (Version 1.0.0) Filer can be utilized without coming up with a merged file that says "Record Number Out of Range."

Frustration!!...Frustration!!... I was working with putting together names for a mailing list for a school centennial celebration. About five hundred names came from all over and in various forms so... hoop-te-doooo... Deskmate would put the situation into alphabetical order at least!

Even though I color coded my labels on backups I lost some of my stuff when up

comes the message referred to above. At that time I had 7 fields but by taking off six fields, I was able to merge. But I went too far... Eventually I found that 4 fields could be successfully merged.

You guessed it.... I had to retype a lot of info and although I do enjoy having constructive computer work, things go a bit tedious after one week!
-H. H. San Gabriel, CA

A: As a partial answer and not directly related to any research we have had time to conduct with the Deskmate program, except a quick review of the Deskmate manual which states that a file form may have up to 21 fields, with a maximum of 58 alphanumeric characters per field per line. Or a maximum of 255 characters per field that would wrap to the field area of the next line.

The manual states that to MERGE one file with another the file FORMS must be exactly the same, if so all data from the source file should merge with the destination file. It also states that "Since one character difference makes the files incompatible," you should make a [master] copy of the form by making a copy of your form prior to entering any information. This master form should then be used to create any new file form of the same type.

'Record number out of range' (error 29, X'1D') message, generally means that the program has sent a request to read a record within a random access file that was beyond the end of the file, and calls for you to provide the correct record number or to try another copy of the file. Since you would have no way of knowing what that record call was without the application of special utilities, you could only try to use another copy of your files, if you had more than one backup.

Since the error could be caused by several factors. It would be difficult to give an exact reason without looking over your backup disks and testing them. However Deskmate is not the most desirable program to use. It was designed to be "a little bit of each type of program that you could use" and was packed with the TRS-80 computer so that when the buyer first took their

computer home they would have something to get started with. None of the programs in it are as good as the stand-alone programs for word processing, spreadsheets, communications and data bases. It is more of a Whitman's Sampler of programs. For very small applications it has some merit. Yet for a flat file data base there are better. pfsFILE is one, Superlog is another. Both are very simple to set up and use, but unfortunately both are out of print and very hard to find. We do have a few copies of Superlog, which are new originals.

LTR: Dear CN80 Readers:

Did you ever start to format a disk and reach for your format program and it wasn't where you thought it was, then you have to look through all your disks until you find it. Well you need a MASTER DISK.

What is a master disk? Well its just a disk that has all your SYS/SYS files on it and your format and backup programs on it plus your basic commands and other things I will get into. The point is that if you make a master disk and label it MASTER DISK in bold letters you will always know where your format and backup programs are.

First you must format a blank disk. Put system and basic interpreter in drive :0, this should have all the files you will need. Then put a blank disk in drive :1 then type format :1 answer all the questions. When formatting is done be sure to put in system(sysres=2), system(sysres=3), system(sysres=10), system(sysres=12) one at a time, it will not take them all at once. You must have them to do backup and that is what comes next.

Type Backup :0 :1(s,i,q=y) S is for sys,i is for inv,Q=Y is for Query = Yes meaning the computer will ask you if you want to backup a file or not, if yes you type y if no you type n. As it asks you which files to backup you type Y for all the sys/sys files,type Y for backup/cmd,basic/cmd,basic ovl,boot/sys,config/sys and format/cmd.

Now you have a master disk. Do not put a lot of junk on it, that just makes a mess, keep it as clean as you can. Put things on it that will help you with formatting and backup.

You might like this one, it's to help with formatting. I wrote it because as you know you must answer questions as to how you want your disk formatted and its always the same except for the name and you can always change that, You use the build command to make a JCL file.

First you take your system and basic interpreter out of :0 and put it away then you put your master disk in :0 then type boot, this is just to be sure that the disk will boot, it is always best to check your work to be sure it does what you want it to do.

You must name your program something so I call mine plato. Why plato ? Well its short and easy to remember so at the prompt type build plato then wait,when the computer stops you will see building plato/jcl :0 then the cursor on the bottom line,here you type:

```
format :1
basic(for name)
The password you use
d (for double Density if you want single
put s)
l (if you use double sided disk put 2)
40 (The disk is tested for 40 cyl so it is best
not to put more then 40)
system(sysres=2)
system(sysres=3)
system(sysres=10)
system(sysres=12)
control shift @ (This tells the computer to
put it on disk so that you can use it)
```

Now that you have built the program we must test it, put a blank disk in :1 (it must be a blank disk or the program will abort, (this is a safety feature, you wouldn't like it if it formatted a disk you wanted to keep).

You now have in drive :0 your master disk and you just wrote a program to do the formatting for you so now you put a blank disk in :1 and you type do plato and set back and let the computer do all the work, if all goes well you will have a formatted disk ready to backup what ever you want on it and if you don't like the name basic for your disk you can change it by doing this, attrib :1(name="name") and it will change the name of the disk in :1.

And that is how that is done.

-R. K. Centerdale, R. I.

LOTTO/BAS Program Listing Number One by W. Barry Knight

```
10 CLS:REM LOTTO/BAS WB KNIGHT,STAR ROUTE,BOX 38S,MAURERTOWN,VA 22644
20 PRINT"THIS PROGRAM CONSIDERS THE 'PICK-SIX' LOTTO GAME WHICH IS POPULAR"
30 PRINT"IN SEVERAL STATES. IT WILL PICK SIX NUMBERS AT RANDOM FOR AFTER YOU TELL"
40 PRINT"IT HOW MANY NUMBERS FROM WHICH TO PICK. IT WILL ALSO TELL YOU HOW MANY"
50 PRINT"COMBINATIONS THERE ARE WITH VARIOUS CORRECT NUMBERS, AND WHAT YOUR CHANCES"
60 PRINT"ARE OF HITTING THE CORRECT NUMBERS. REMEMBER THAT THIS PROGRAM, LIKE ANY"
70 PRINT"OTHER, CANNOT INCREASE YOUR CHANCES OF WINNING. GOOD LUCK. HIT ANY KEY"
80 K$=INKEY$:IF K$="" THEN 80
90 CLS:INPUT"PICK SIX FROM HOW MANY";N
100 CLS
110 DIM A(N),C(6)
120 FOR I=1 TO N
130 A(I)=I
140 NEXT
150 FOR I=1 TO 6
160 B=RND(N-S)
170 C(I)=A(B)
180 FOR J=B TO N-1-S
190 A(J)=A(J+1)
200 NEXT J
210 S=S+1
220 NEXT I
230 U=1
240 WHILE U
250 FOR I=1 TO 5
260 IF C(I)>C(I+1) THEN SWAP C(I),C(I+1):T=T+1
270 NEXT
280 U=T:T=0
290 WEND
300 FOR I=1 TO 6
310 PRINT C(I);
320 NEXT
330 PRINT
340 INPUT"WOULD YOU LIKE THE COMPUTER TO SELECT ANOTHER SET OF SIX NUMBERS (Y/N)";A$
350 IF A$="Y" OR A$="y" THEN S=0:ERASE A,C:GOTO 110
360 CLS:INPUT"WOULD YOU LIKE TO SEE THE NUMBER OF COMBINATIONS AND YOUR CHANCES
  OF SELECTING VARIOUS CORRECT NUMBERS (Y/N)";B$
370 IF B$="Y" OR B$="y" THEN 380 ELSE END
380 CLS:P=6:A=1:DIM B(P)
390 FOR I=1 TO P
400 B(I)=I
410 A=((N+1-I)/I)*A
420 NEXT
430 PRINT"FOR A PICK OF SIX OUT OF"N"NUMBERS, THE TOTAL NUMBER OF COMGINATIONS IS"A
440 FOR I=1 TO P-1
450 B(P-1)=((P+1-I)/I)*B(P-1)
460 NEXT
470 B(P-1)=(N-P)*B(P-1)
480 FOR I=1 TO P-2
490 B(P-2)=((P+1-I)/I)*B(P-2)
500 NEXT
510 B(P-2)=((N-P)*(N-P-1)/2)*B(P-2)
520 FOR I=1 TO P-3
530 B(P-3)=((P+1-I)/I)*B(P-3)
```

Cont'd on next page.

```

540 NEXT
550 B(P-3) = ((N-P)*(N-P-1)*(N-P-2)/6)*B(P-3)
560 FOR I=1 TO P-4
570 B(P-4) = ((P+1-I)/I)*B(P-4)
580 NEXT
590 B(P-4) = ((N-P)*(N-P-1)*(N-P-2)*(N-P-3)/24)*B(P-4)
600 B(P-5) = (N-P)*(N-P-1)*(N-P-2)*(N-P-3)*(N-P-4)/20
610 B(P-6) = (N-P)*(N-P-1)*(N-P-2)*(N-P-3)*(N-P-4)*(N-P-5)/720
620 PRINT:PRINT"THERE IS ONE COMBINATION WITH ALL"P"WINNING NUMBERS"
630 FOR I=1 TO 6
640 PRINT"THERE ARE"B(P-I)"COMBINATIONS WITH"P-I"WINNING NUMBERS"
650 NEXT
660 PRINT
670 PRINT"YOUR CHANCES OF HITTING ALL SIX NUMBERS IS ONE IN"A
680 FOR I=1 TO 6
690 PRINT"YOUR CHANCES OF HITTING"P-I"CORRECT NUMBERS IS ONE IN"A/B(P-I)
700 NEXT

```

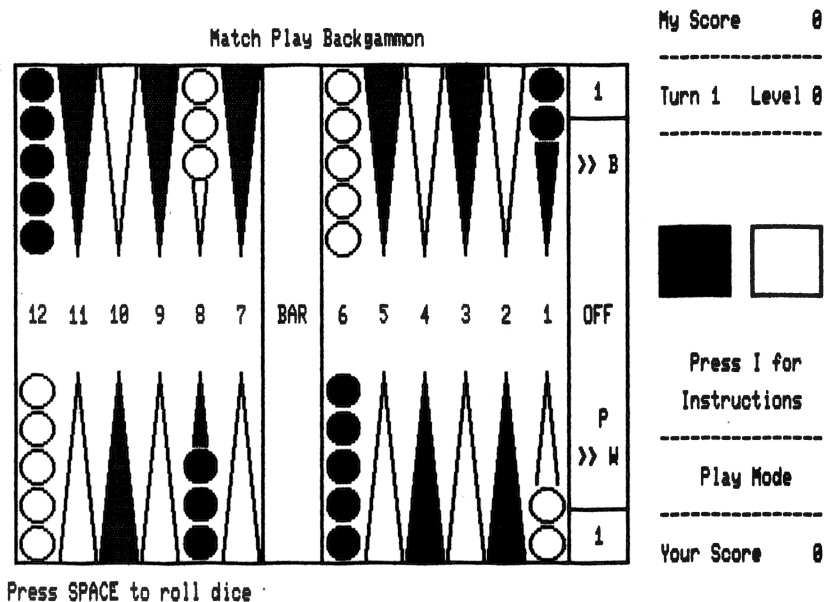
MANDD/BAS Program Listing Number Two by Robert M. Knowles

```

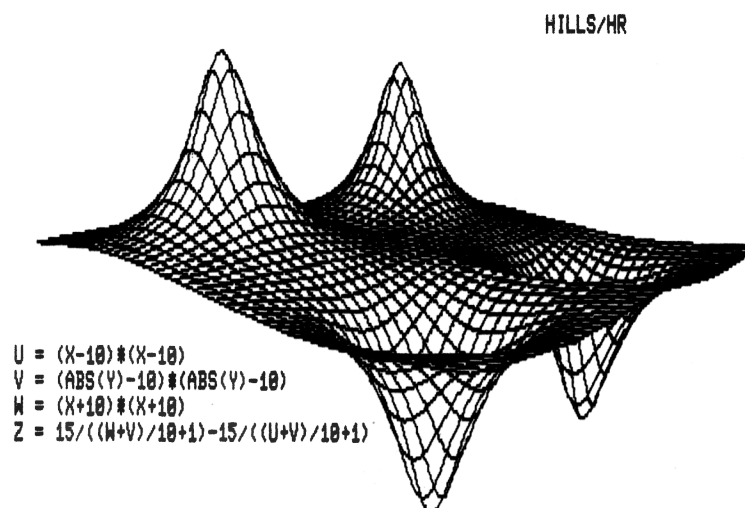
10 CLS
20 PRINT"WHICH PROGRAM WOULD YOU LIKE TO RUN?"
30 PRINT"IF YOU WANT AN OTHER PROGRAM ENTER [0], IF NOT THEN BREAK."
40 PRINT"1) DEVIDE"
50 PRINT"2) MULTIPLY"
60 INPUT ;A
70 ON A GOSUB 80,150
80 INPUT"ENTER NUMBER TO DEVIDE";A
90 IF A=0 GOTO 20
100 INPUT"ENTER NUMBER TO BE DEVIDED BY";B
110 C=A/B
120 SOUND 1,1
130 PRINT A "DEVIDED BY "B "IS "C
140 GOTO 80
150 INPUT"ENTER NUMBER TO BE MULTIPLIED";A
160 IF A=0 GOTO 20
170 INPUT"NUMBER TO BE MULTIPLIED BY ";B
180 C=B*A
190 SOUND 1,1
200 PRINT B "TIMES "A "IS "C
210 RUN 150

```

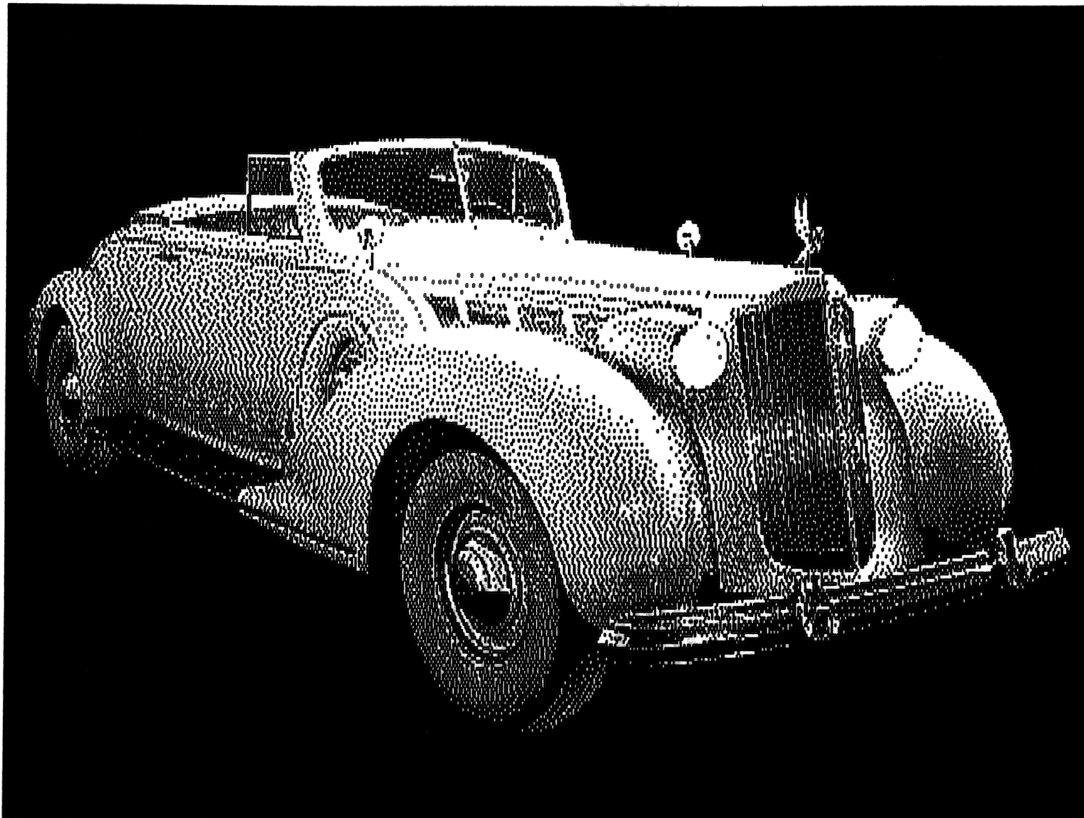




Screen from Match Play Backgammon
Submitted by Gary Shanafelt accompanied
by his article printed in this issue.



Sample surface from Surface Plot
Submitted by Gary Shanafelt accompanied
by his article printed in this issue.



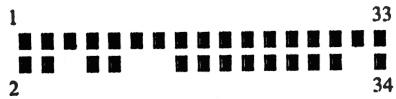
Packard HiRes file Submitted by Gary Shanafelt.
Printed with David Goblen's HR Utilities.



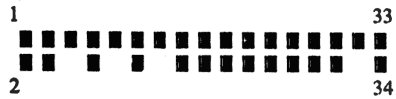
Model T HiRes file. Submitted by Gary Shanafelt.
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Disk Drive Cables for TRS-80 Model 4 Computers

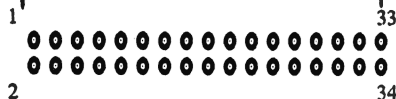
Pins are pulled for drive select of original RS drives.



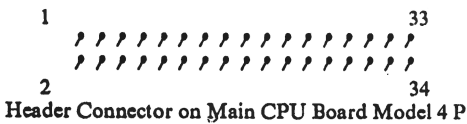
Pins Pulled for Drive Zero Model 4 P



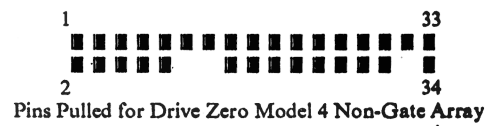
Pins Pulled for Drive One Model 4 P



Connector to Main PC Board Model 4 P



Header Connector on Main CPU Board Model 4 P



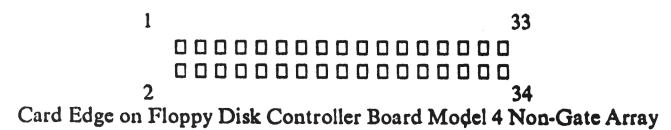
Pins Pulled for Drive Zero Model 4 Non-Gate Array



Pins Pulled for Drive One Model 4 Non-Gate Array



Connector to Floppy Disk Controller Board Model 4 Non-Gate Array



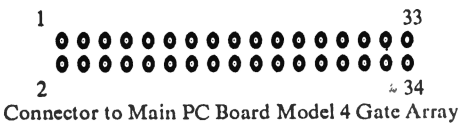
Card Edge on Floppy Disk Controller Board Model 4 Non-Gate Array



Pins Pulled for Drive Zero Model 4 Gate Array



Pins Pulled for Drive One Model 4 Gate Array



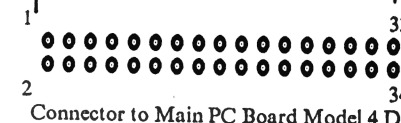
Connector to Main PC Board Model 4 Gate Array



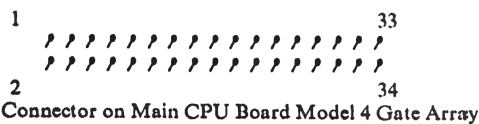
Pins Pulled for Drive Zero Model 4 D



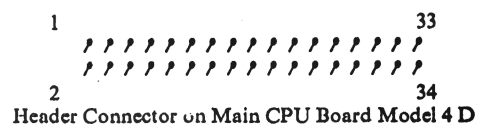
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Header Connector on Main CPU Board Model 4 D

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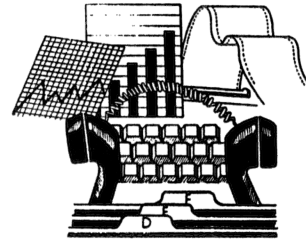
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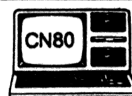
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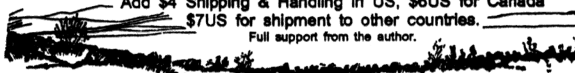
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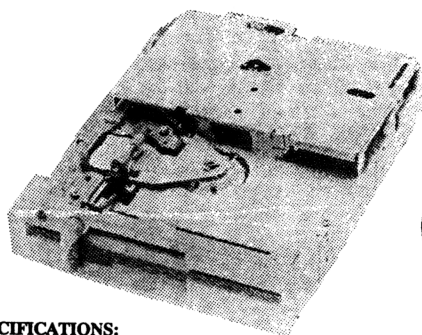
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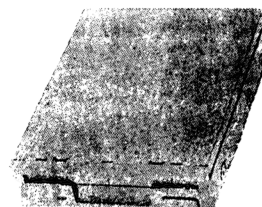
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Functions..... Add Delete Scan View Find (Search) Print Rename Change Update Toggle Locate Manual Backup Exit
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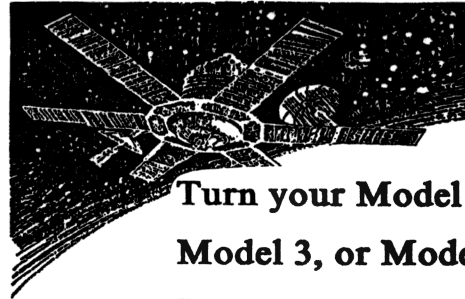
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Introducing ED-IT for the Model 4 by Mark Allen Reed

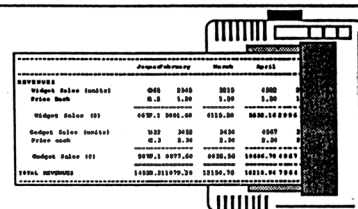
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MACHINE

by J. F. R "Frank" Slinkman

Play real poker on your computer with remarkable screen renditions of the playing cards. Optimum video poker strategy can be used on VIDPOKR4 or to play the real thing in Atlantic City or Nevada.

Any Poker fan will really enjoy playing against the computer, or practice the winning strategy that is included with this game package.

Model 4 with 128K and High Resolution Board Required

\$19.95 (Y) S&H

Order from Computer News 80

PRINTERS FROM CN80 WITH PROVEN COMPATIBILITY

SEIKOSHA SP-2400 9 Pin Printer

80 Column Printer
300 Characters Per Second
IBM and Epson Compatible
Standard Parallel Interface
Built-In Push Tractor & Friction Feed
Easy Front Panel Controls
Paper Parking
Graphics
Two year Manufacturer's Warranty

\$ 179

Add \$ 6.00 S&H, Shipped by UPS only.

Fully supported by CN80 and completely compatible with PostMaster, Rembrandt, Long and Loud and all the programs, published by CN80. Will work with any Model III/4,4P or 4D computer.

SP2400 Ribbons

CN1041 \$6.40 ea. \$5.90 six or more.

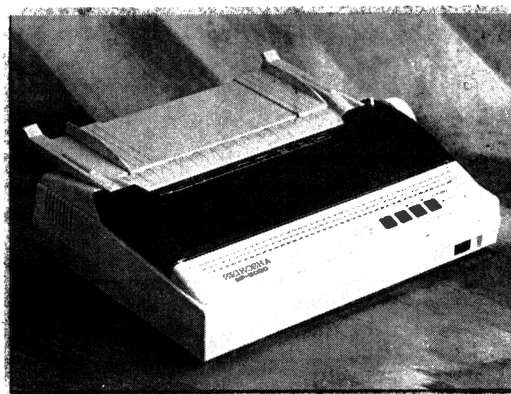
SL-90 Ribbons

CN1046 \$7.25 ea. \$6.75 six or more.

SEIKOSHA SL-90 PLUS 24 Pin Printer

80 Column Printer
240 CPS draft / 80 CPS LQ
IBM and Epson Compatible
Standard Parallel Interface
Built-In Push Tractor & Friction Feed
Easy Front Panel Controls
Paper Parking
Graphics 360 Resolution
Two year Manufacturer's Warranty

\$ 279



SEIKOSHA
A SEIKO GROUP COMPANY

PostMaster

Computer News 80

PostMaster by David P. Miller is a program that lets you create Posters, Letterheads and Mailing Labels with icons, borders, and many different character fonts using your dot matrix printer. The program runs on TRS-80 Model 4/4P/4D, with 64K or 128K of memory that has a MicroLabs or Radio Shack high resolution board installed.

This program has received the highest praise from reviewers of any program ever written for the Model 4. It allows you to use thousands of icons, borders, and fonts that are available from the File Cabinet Icon Library, it also allows you to add your own icons, borders and fonts.

Printers supported: Radio Shack DMP-130, -130A, -131, -132, -133, -430, -2100P, also any Radio Shack DMP printer with a 3-digit number with "3" as the second digit. All Epson and IBM printers. All other dot matrix printers that are Epson and IBM emulation printers. Seikosh SL-90, -2000Plus, -2400. Okidata Microline 182 and 192. Panasonic KX-P1091, -1092, -1124, nonsuffixed. Star 10X, -15X, -NP, -NX, LC-10. C-ITOH 1510, 8510, C-130. (Note - Dot Matrix printers providing 300-dpi or 180-dpi may not work with PostMaster and no guarantees can be made concerning them.

Printers that are not supported are: Radio Shack DMP-110, -120, -400, -500, -2100. Panasonic suffixed printers 1124i, 1124e, etc. Okidata 82, 92, and Daisy wheel printers.

Order from Computer News 80.....\$40.....add S&H (Z)

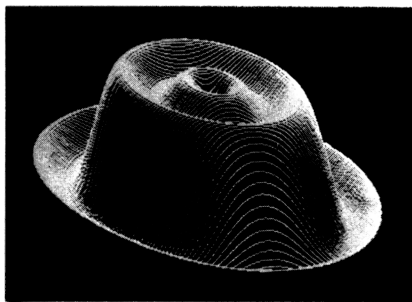
Grafyx Solution™

HIGH RESOLUTION BOARD FOR MODEL 3/4/4P/4D

Distributed by Computer News 80

Free Draw Program
Included

Hi-Resolution Graphics for Mod 4/4D/4P/III



Superior Hardware. The Grafyx Solution provides 153,600 pixel elements which are arranged in a 640×240 or on the Model III a 512×192 matrix. Hundreds of new business, personal, engineering, and educational applications are now possible. The hi-res display can be shown on top of the standard display containing text, special characters, and block graphics. This simplifies program debugging, text labeling, and upgrading current programs to use graphics. The Grafyx Solution fits completely within any tape or disk based Model 4, 4D, 4P, or III. Installation is easy with the plug-in, clip-on Grafyx Solution board.

Superior Basic. Over 20 commands are added to the Basic language. These commands will set, clear or complement points, lines, boxes, circles, ellipses, or arcs. The hi-res screen can be printed on any of 30 popular printers or saved or loaded to disk without leaving Basic. Areas may be filled in with any of 256 patterns. Sections of the screen may be saved and then put back using any of five logical functions. Labels can be printed in any direction. The viewing area can be changed. The entire screen can be complemented or cleared. Graphics Basic provides dot densities of 640×240 , 320×240 , 160×240 , and 160×120 , all of which can be used in the same display.



Superior Software. The board comes with over 40 programs and files which make it easier to use, serve as practical applications, demonstrate its capabilities, and serve as programming examples. The software works with TRSDOS 1.3, 6.1.2, 6.2, 6.3; Dosplus 3.4, 3.5, 4; LDOS; and Newdos80. The Grafyx Solution is also supported by 30 optional applications programs: Draw, Bizgraph, xT.CAD, 3D-Plot, Slideshow, Mathplot, Surface Plot, Chess, etc.

Purchase a Grafyx Solution Hi-Res Graphics Board for \$ 99.00 and receive a free copy of DRAW a powerful graphics program which allows drawing or designs to be easily created on a Model III/4/4P/4D.

\$ 99.00 Add (Z) S&H

Specify Model 3, Model 4p,
Model 4 Gate Array, or
Model 4 Non Gate Array
when ordering. The boards
are different for each.
Please include phone number.



SAVE WITH OUR HIGH RESOLUTION COMBINATION PACKAGE NUMBER ONE

MicroLabs Grafyx Solution Board
MicroLabs Draw Program
PostMaster Program
Hi-Res Utilities Program
PostMaster Support Utilities
Five HiRes File Cabinet Volumes

A \$210.50 value if purchased separately.

All for the Super CN80 low price of

\$166.95

Add (Z) S&H



ALREADY HAVE YOUR HIGH RESOLUTION BOARD INSTALLED - THEN

SAVE WITH OUR HIGH RESOLUTION COMBINATION PACKAGE NUMBER TWO

PostMaster Program
Hi-Res Utilities Program
PostMaster Support Utilities
Five HiRes File Cabinet Volumes

A \$111.50 value if purchased separately.

All for the Super CN80 low price of

\$ 75.95

Add (Z) S&H



Special Purchase of Never Used Software

Sale

ALL NEW NEVER OWNED - BOOKS and PROGRAMS - LIMITED QUANTITIES

BOOKS	PRICE	PROGRAMS from OTHERS	PRICE
SCELBI "8080" SOFTWARE GOURMET GUIDE	5.00	MOD 1/3 MODEM80	10.00
REFERENCE CARD for Z80	1.50	MOD 1/3 POWERMAIL + w/TEXTMERGE	25.00
MOD 1 57 PRACTICAL PROGS & GAMES in BASIC	5.00	MOD 1/3 POWERDOT	10.00
MOD 1 MICROCOMPUTER PRIMER	5.00	MOD 1/3 ELECTRIC WEBSTER - HYPENATION	10.00
MOD 1 REFERENCE CARD	1.50	MOD 1/3 POWERMAIL PLUS	20.00
MOD 1 LEVEL II SYSTEM REFERENCE CARD	1.50	MOD 1/3 ELEC. WEBSTER - GRAMMAR & STYLE	15.00
THE CP/M HANDBOOK w/ MP/M by Zaks	7.00		
		MOD 1/3/4 TINYPAY	10.00
<u>PROGRAMS from MISOSYS</u>		MOD 1/3/4 MSCRIPT - WORD PROCESSOR	20.00
PRO-MACH2	10.00	MOD 1/3/4 SIFTER SHIFTER	10.00
PRO-ZCAT	10.00	MOD 1/3/4 NUCLIX	10.00
PRO-X-FTS	10.00	MOD 1/3/4 BATTLE of ZEIGHTY	10.00
PRO-ADE	10.00	MOD 1/3/4 SUPREME RULER + (GAMES)	15.00
PRO-SAID	10.00	MOD 1/3/4 LTERM	10.00
CMD-FILE	10.00		
X-FTS	10.00	MOD 3 PLANETFALL	10.00
ADE	10.00	MOD 3 PENCIL TIP use w/ELEC. PENCIL	15.00
MACH2	10.00	MOD 3 FLIGHT SIMULATOR (CASSETTE)	7.00
		MOD 3 NEWDOS 80 v.2.0	30.00
<u>PROGRAMS from OTHERS</u>		MOD 3 26-1584 CHECKWRITER 80	15.00
MOD 1 DOSPLUS - OP SYS v.3.5.0	30.00	MOD 3 INSTANT ASSEMBLER	10.00
MOD 1 INSTANT ASSEMBLER	10.00	MOD 3 CNVBASIC/CMD	10.00
MOD 1 MULTI-DOS	75.00	MOD 3 ZMAIL	10.00
MOD 1 ALCOR MULTI-BASIC	25.00	MOD 3 ALCOR C (DISKS ONLY)	15.00
MOD 1 ALCOR C (DISKS ONLY)	15.00	MOD 3 SUPERCROSS/XT	60.00
MOD 1 STARCROSS	10.00	MOD 3 ELECTRIC WEBSTER - DICTIONARY	15.00
MOD 1 PLANETFALL	10.00	MOD 3 ALCOR MULTI-BASIC (DISKS & MANUAL)	25.00
MOD 1 ZORK II	10.00	MOD 3 ALCOR MULTI-BASIC v.1.0.1(DISKS ONLY)	15.00
MOD 1 SORCERER	10.00		
MOD 1 WITNESS	10.00	MOD 3/4 ZORLOF - WORD PROCESSOR	10.00
MOD 1 DEADLINE	10.00	MOD 3/4 VERSAPAYABLES	15.00
MOD 1 SUSPENDED	10.00		
MOD 1 VERSAPAYROLL	15.00	MOD 4 SUPERLOG	50.00
MOD 1 VERSAPAYABLES	15.00	MOD 4 DOSPLUS OP SYS MANUAL ONLY	10.00
MOD 1 ENCHANTER	10.00	MOD 4 700-2298 UPGRADE TRSDOS to 6.2.1	10.00
MOD 1 FLIGHT SIMULATOR (CASSETTE)	7.00	MOD 4 DISn DATa ver 4	10.00
MOD 1 FLIGHT SIMULATOR (DISK)	7.00	MOD 4 DATAGRAPH - DMP2100	10.00
MOD 1 LAZYCOMM	10.00	MOD 4 DATAGRAPH - EPSON	10.00
MOD 1 SUPERCROSS/XT	60.00	MOD 4 DATAGRAPH - LPVIII/DMP120-420	10.00
MOD 1 DISK INDEX	10.00	MOD 4 LAZYCALC	15.00
MOD 1 MODEL 1 LOG	10.00	MOD 4 MULTIDOS	85.00
MOD 1 26-2213 LDOS 5.1.3/R OP SYS	30.00	MOD 4 LAZYWRITER	25.00
		MOD 4 LETTERSET DESIGN SYSTEM - DMP/OKI	25.00
MOD 1/3 BASIC CONVERSION HANDBOOK	5.00	MOD 4 LETTERSET DESIGN SYSTEM - EPS/ITO	25.00
MOD 1/3 26-2017 ASSEMBLY TUTOR (CASSETTE)	5.00	MOD 4 MSCRIPT - WORD PROCESSOR	20.00
MOD 1/3 26-2011 SERIES I ED.ASSEM.(CASSETTE)	10.00	MOD 4 ALCOR MULTI-BASIC	25.00
MOD 1/3 GALAXY INVASION (CASSETTE)	10.00	MOD 4 ELECTRIC WEBSTER-GRAMMAR & STYLE	15.00
MOD 1/3 GALAXY INVASION (DISK PROGRAM)	5.00	MOD 4 SUPERCROSS/XT	60.00
MOD 1/3 WEERD (CASSETTE PROGRAM)	5.00	MOD 4 POWERMAIL PLUS	20.00
MOD 1/3 ATTACK FORCE (CASSETTE PROGRAM)	5.00	MOD 4 TAS SPECIAL EDITION #19	10.00
MOD 1/3 SUPER NOVA (CASSETTE PROGRAM)	5.00		
MOD 1/3 BFBLIB - DEMO DISK	10.00		
MOD 1/3 MULTIDOS	75.00		
MOD 1/3 AUTOLOADER	10.00		

Add shipping & handling charges: \$4.00 first item, \$1.00 each additional item with a maximum of \$10.00 for UPS ground service.

IDIM BULLETIN BOARD HOST SYSTEM by Leonard Lorden

IDIM (I did it my way) Bulletin Board Host System is a completely new software system written for the Model 4. It comes with a 22 page manual full of instructions on how to get started and three disks of programs for setting up your own bulletin board system, or upgrading your existing system. Many new operating features have been added to this bulletin board program by the author. For those who would like to review its features send \$2 to cover the cost of mailing and we will send you a copy of the manual for your inspection.

IDIM Bulletin Board Host System \$ 80, plus (Y) S&H.

CONNECTORS

DESCRIPTION	PRICE
FLAT RIBBON CABLE CONNECTORS	
50 Pin Male Edge Card Mating Connector	4.95
50 Pin 25x2 Edge Card/Female	1.75
50 Pin 25X2 Header Female/Socket	1.25
50 Pin 25x2 Header Male/Plug w/mounting	8.50
50 Pin 25x2 Header Male/Plug no mounting	8.50
36 Contact Centronics Male (Printers)	4.00
34 Pin 17x2 Header Female/Socket	1.95
34 Pin 17x2 Edge Card/Female	1.35
34 Pin 17x2 Header Male/Plug No Mounting	7.50
34 Pin 17x2 Header Male/Plug W/Mounting	7.50
25 Pin DB25 (RS232) Male/Plug	3.00
25 Pin DB25 (RS232) Female/Socket	3.00

PC BOARD MOUNT

34 Pin 17x2 Box Header - Straight Solder	2.50
50 Pin 25x2 Box Header - Straight Solder	4.50

CONNECTOR S&H

Add \$ 2.00 Shipping and Handling if ordered alone.

Shipping and Handling included if ordered with other items.

EXTENSION BLOCKS AND FLAT CABLE

DESCRIPTION	PRICE
EXTENSION CONTACT BLOCKS	
34 Pin 17x2 PCB Socket - 3/16" High	5.50
34 Pin 17x2 PCB Socket - 5/16" High	5.50
34 Pin 17x2 PCB Socket - 5/8" High	5.50

EXTENSION S&H

Add \$ 2.00 Shipping and Handling if ordered alone.

Shipping and Handling included if ordered with other items.

FLAT RIBBON CABLE

25 Conductor	.38 per ft.
34 Conductor	.51 per ft.
50 Conductor	.75 per ft.

CABLE S&H

Add \$ 3.00 Shipping and Handling if ordered alone.

Shipping and Handling included if ordered with other items.

CUSTOM CABLES BUILT UPON REQUEST

Call for price quotes.



SPECIAL DOG DAYS SALE FROM JULY 1st THROUGH AUGUST 15th.

EXTERNAL TWO DISK DRIVE UNITS

with two 5-1/4 360K drives, two 3-1/4 720K drives, or one of each.

\$ 173.00 + (\$ 6 S&H) - Save \$ 20

SELECTOR SWITCHES

A-B Two position parallel centronic for printers.	\$ 12.95
A-B Two position serial DB25/RS232 for modems, mice, scanners, etc.	\$ 11.95
A-B-C Three position serial DB25/RS232 for modems, mice, etc.	\$ 14.95
A-B-C-D Four position serial DB25/RS232 for modems, mice, etc.	\$ 19.95

Add (Z) S&H For Selector Switches

Hurry sale ends August 15th.

TOP QUALITY PRINTER RIBBONS

Printer	Radio Shack Cat. Number	CN80 Number	Type	Price Each for One 6 or More	
LP I, II, IV	26-1413	CN1001	FABRIC REFILL	5.55	5.05
LP III, V	26-1414	CN1002	FABRIC CART.	6.38	5.88
LP III, V	26-1414	CN1003	FABRIC REFILL	4.79	4.29
LP VI/VIII, DMP 400/420	26-1418	CN1004	FABRIC CART.	5.60	5.10
LP VII, DMP 100	26-1424	CN1038	FABRIC CART.	6.00	4.50
DMP 110	26-1283	CN1005	FABRIC CART.	6.58	6.08
DMP130/130A/132/133/107	26-1236	CN1006	FABRIC CART.	6.40	5.90
DMP130/130A/132/133/107	26-1238	CN1007	FABRIC REFILL	5.00	4.50
DMP 500	26-1482	CN1008	FABRIC CART.	13.40	12.90
DMP 120, 200	26-1483	CN1009	FABRIC CART.	7.00	6.50
DMP 120, 200	26-1489	CN1010	FABRIC REFILL	4.85	4.35
DMP 105, 106	26-1288	CN1011	FABRIC CART.	9.64	9.15
DMP 105, 106	26-1288	CN1012	FABRIC REFILL	5.84	5.34
DMP 430	26-1296	CN1013	FABRIC CART.	12.25	11.75
DMP 440	26-2809	CN1014	FABRIC CART.	19.30	18.80
DMP 2100, 2100P, 2110	26-1442	CN1015	FABRIC CART.	6.10	5.60
DMP 2100, 2100P, 2110	26-1442	CN1016	FABRIC REFILL	4.85	4.35
DMP 2120	26-2834	CN1017	FABRIC CART.	13.05	13.05
DMP 2120	26-2836	CN1018	FABRIC REFILL	7.90	7.40
LMP 2150	26-1287	CN1019	FABRIC CART.	8.00	7.50
DWP II, DWP 410/510	26-1419	CN1020	MULTI-STRIKE CT.	5.35	4.85
DWP II, DWP 410/510	26-1419	CN1021	M-S REFILL	4.50	4.00
DWP II, DWP 410/510	26-1449	CN1022	FABRIC CART.	6.55	5.95
DWP II, DWP 410/510	26-1449	CN1023	FABRIC REFILL	5.45	4.95
DWP 520, 230, 210	26-1445	CN1024	MULTI-STRIKE CT.	5.15	4.65
DWP 520, 230, 210	26-1445	CN1025	M-S REFILL	4.50	4.00
DWP 520, 230, 210	26-1458	CN1026	FABRIC CART.	5.60	5.10
DWP 520, 230, 210	26-1458	CN1027	FABRIC REFILL	4.80	4.30
DWP 220	26-1299	CN1028	MULTI-STRIKE CT.	7.95	7.45
DWP 220	26-1299	CN1029	M-S REFILL	3.60	3.10
DMP 300/2102	26-2819	CN1030	FABRIC CART.	7.15	6.65
DMP 300/2102	26-2819	CN1031	LONG LIFE CART.	6.85	6.35
ALPS ASP-1000	900-2326	CN1032	FABRIC CART.	6.60	6.10
EPSON FX/MX/RX-80	900-2327	CN1033	FABRIC CART.	5.50	5.00
EPSON LX/80/90	900-2328	CN1034	FABRIC CART.	5.00	4.50
PANASONIC KXP1090	900-2331	CN1035	FABRIC CART.	6.10	5.60
PANASONIC KXP1090	900-2331	CN1036	LONG LIFE CART.	7.35	6.85
STAR MICRON. NX1000	900-2332	CN1037	FABRIC CART.	6.45	5.95
PANASONIC KXP1180/1190/1191		CN1039	FABRIC CART.	6.90	6.40
PANASONIC KXP1180/1190/1191		CN1040	LONG LIFE CART.	7.60	7.10
SEIKOSHA SP-2000		CN1041	FABRIC CART.	6.40	5.90
DMP 500		CN1043	FABRIC REFILL	5.30	4.80
DMP 430		CN1044	FABRIC REFILL	5.60	5.10
ALPS ALLEGRO 24		CN1045	FABRIC CART.	7.25	6.75

ALL RIBBONS ARE BLACK, CART.= Plastic Cartridge, REFILL= Refills Only/No Cartridge.
Add for Shipping and Handling

1 to five items add (Y) 6 or more items add (Z)
Please refer to the CN80 Product Guide Shipping and Handling Schedule.

Some ribbons for the older Radio Shack printers are not stocked, but are still available by special order, please allow an additional week shipping time. All stock ribbons are shipped within 24 hours from the time the order is received. C.O.D orders accepted. Government and educational institution purchase orders are accepted. Sorry, we do not accept credit card orders.

Computer News 80 Product Guide

BACK ISSUES, INDEX, & REPRINTS

CN80 BACK ISSUES Individual Copies	\$ 4.00 (V)
Available from Vol 1 No. 1 January 1988	
All of 1988 Bound	\$ 18.00 (Z)
All of 1989 Bound	\$ 20.00 (Z)
All of 1990 Bound	\$ 22.00 (Z)
All of 1991 Bound	\$ 24.00 (Z)

CN80 INDEX on Disk	\$ 2.00 (V)
Complete index for CN80 1988 thru 1991.	
24 classifications of search...	
Specify LSDOS 6.3 or TRSDOS 1.3	

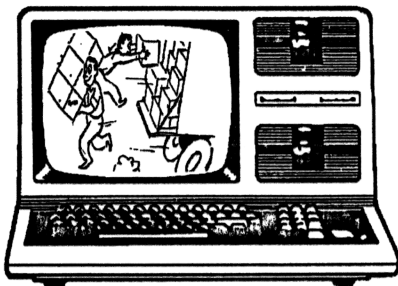
CN80 NEWCOMERS GUIDE VOL 1	\$ 7.95 (V)
Reprint of all CN80 "Newcomers Corner" part 1 to 8.	

CN80 DISK SERIES

NUMBER 1	All the programs printed in Vol 1 No. 1 thru No. 6.
NUMBER 2	All the programs printed in Vol 1 No. 7, 8 and 9.
NUMBER 3	All the programs printed in Vol 1 No.10, 11 and 12.
NUMBER 4	All the programs printed in Vol 2 No.1, 2 and 3.
NUMBER 5	All the programs printed in Vol 2 No.4, 5 and 6.
NUMBER 6	All the programs printed in Vol 2 No.7, 8 and 9.
NUMBER 7	All the programs printed in Vol 2 No.10, 11 and 12.
NUMBER 8	All the programs printed in Vol 3 No.1, 2 and 3.
NUMBER 9	All the programs printed in Vol 3 No.4, 5, and 6.
NUMBER 10	All the programs printed in Vol 3 No.7, 8, and 9.
NUMBER 11	All the programs printed in Vol 3 No.10, 11, and 12.
NUMBER 12	All the programs printed in Vol 4 No. 1, 2, and 3.
NUMBER 13	All the programs printed in Vol 4 No. 4, 5, and 6.
NUMBER 14	All the programs printed in Vol 4 No. 7, 8, and 9.
NUMBER 15	All the programs printed in Vol 4 No. 10, 11 and 12.
NUMBER 16	All the programs printed in Vol 5 No. 1, 2 and 3.
NUMBER 17	All the programs printed in Vol 5 No. 4, 5 and 6.

CN80 Disk Series are \$5.00 each (V)

PLEASE NOTE: All CN80 DISK SERIES are on FLIPPY 5-1/4" disks: TRS/LS-DOS 6.3 format on Side 1 and TRSDOS 1.3 format on Side 2. Also available on 3-1/2" disks @ \$5.50 each (LSDOS 6.3.1 or LDOS 5.3.1 format only). Each Disk Series has Bonus programs.



MANUALS & PROGRAMS PUBLISHED BY CN80

MARK REED'S MOD 4 UTILITY DISK	\$ 14.95 (Y)
Sixteen useful utilities for every Model 4 owner.	

MARK REED'S MODEL 4 ED-IT	\$ 17.95 (Y)
For TRSDOS 6.2 or LS-DOS 6.3. New full-screen text editor. Powerful enough for a programmer yet simple enough for the casual user.	

PATCH UTILITY PROGRAM FOR TRSDOS 1.3	\$ 10.00 (V)
by Henry H. Herrdegen. This program contains all the patches for TRS-DOS 1.3, patches for Scripsit, and for "Profile III+", plus program to install the patches.	

Z80 MACHINE LANGUAGE TECHNIQUES	\$ 22.95 (Z)
For the TRS-80 by Don Ady. 236 8-1/2 x 11 pages. "Presenting all the required fundamentals of Machine Language Programming, with practical applications."	

PACK for Model 1/3/4	\$ 17.95 (Y)
BASIC Program Packer by David Goblen.	

PACK - MS-DOS Version	\$ 17.95 (Y)
BASIC Program Packer by David Goblen.	

DEA Disk Editor and Assembler	\$ 49.85 (Z)
For Mod I/III/4 by David Goblen. Extends your computing power and Assembling Language editing and assembling. 118 Pages 8-1/2 x 11 format.	

T62DOSXT Upgrade TRS 6 Dating	\$ 18.00 (X)
by David Goblen. Extends TRSDOS 6.x date entry beyond Dec. 31, 1987, patches & utility programs.	

BUSY-CALC Spreadsheet Program	\$ 79.95 (Z)
by David Goblen. Small business & family spreadsheet program. Model 4/4P/4D; TRSDOS 6.x, LSDOS 6.3.x.	
BUSY-CALC DEMO DISK ONLY	\$ 10.00 (V)
Redeemable against purchase price of BUSY-CALC.	

BCX Spreadsheet Program	\$109.00 (Z)
by David Goblen. For Model 4's with Extended Memory (minimum of 128k required).	
BCX DEMO DISK ONLY	\$ 15.00 (V)
Redeemable against purchase price of BCX.	

DAVID'S MODEL 3 FILE UTILITIES	\$ 9.00 (Y)
by David Goblen. Eight powerful programs for LDOS 5.x.	

DAVID'S MODEL 3 SYSTEM UTILITIES	\$ 16.00 (Y)
by David Goblen. 14 powerful programs designed for use with LDOS 5.x systems.	

DAVID'S MODEL 4 FILE UTILITIES	\$ 9.00 (Y)
by David Goblen. Nine powerful programs that save hours of work for TRS/LSDOS 6.x systems.	

DAVID'S MODEL 4 SYSTEM UTILITIES	\$ 16.00 (Y)
by David Goblen. 16 powerful programs designed for use with TRS/LSDOS 6.x systems	

SCRIPT Word Processor	\$ 37.95 (Y)
for Model I, III, or 4/4P/4D by David Goblen.	
Specify Version when ordering:	
Model III TRSDOS 1.3	
Model I or III LDOS	
Model I NEWDOS/80 v 1	
Model I or III NEWDOS/80 v 2	
Model 4/4P/4D TRSDOS/LSDOS 6.X	
Model 4/4P/4D DOSPLUS	

SCRIPT SPELLING VERIFIER by David Goblen.	\$ 37.95 (Y)	SLOT4 by J.F.R. Slinkman. Accurate simulation of 1930's Mills slot machine. True revolving dials, moving handle, and realistic sound effects. Mod 4 & Hi-Res required.	\$ 14.95 (Y)
SUPERSCRIPSIT SPELLING CHECKER by David Goblen. Specify version when ordering Spellers Model 1, III, 48k, 2 disk drives minimum required. Model 4 64k, 2 disk drives minimum required.	\$ 37.95 (Y)	VIDPOKR4 by J.F.R. Slinkman. Play real video poker on your computer. Remarkable screen renditions of playing cards. Mod 4, 128k, & Hi-Res required.	\$ 19.95 (Y)
MODEL 3 FBACKUP by David Goblen LDOS 5.x. Very fast and versatile backup utility.	\$ 15.00 (Y)	The CN80 MOUSE HOUSE PRODUCTS	
MODEL 4 FBACKUP by David Goblen Very fast and versatile backup utility for Model 4.	\$ 15.00 (Y)	MOUSE+ DRIVER by David Goblen	\$ 10.00 (Y)
MODEL 3 FASTBACK by David Goblen LDOS 5.x systems. Very fast hard drive backup prg.	\$ 29.95 (Y)	Complete Mouse Driver Program and manual for 2 or 3 button mice for Model 4. Write your own mouse programs in BASIC or program language.	
MODEL 4 FASTBACK by David Goblen TRS/LSDOS 6.x systems. Very fast hard drive prg.	\$ 29.95 (Y)	M T K by David Goblen	\$ 18.00 (Y)
MODEL 3 FFORMAT by David Goblen Fast FORMAT for Model 3 using LDOS 5.3.x.	\$ 15.00 (Y)	Mouse to Keyboard Interface program w/manual for 2 or 3 button mice for Model 4. MOUSE DRIVER Required.	
MODEL 4 FFORMAT by David Goblen Fast FORMAT for Model 4 using LSDOS 6.3.x.	\$ 15.00 (Y)	THREE BUTTON MOUSE	\$ 26.95 (Z)
HARD DISK BUILDER by David Goblen Build your own hard disk driver.	\$ 10.00 (V)	Three button mouse and adapter for RS-232 connection. NOTE: Model 4s w/RS-232 connector pointing down require an Extender Cable \$8.00 + \$2.00 S&H.	
REMBRANDT Graphics Toolkit by Spectre Technologies. Graphic software for Mod 4/4D/4P. TRSDOS/LSDOS, hi-res board is not required. Order both Rembrandt and Long & Loud for \$ 67.50 (Z)	\$ 39.95 (Z)	CN80 COMBINATION MOUSE PACKAGE M4s w/RS-232 connector out the back \$ 52.95 (Z) M4s w/RS-232 connector on the bottom \$ 59.95 (Z) Includes: 3 button mouse w/adapter, and extender cable if needed (see pricing above), Mouse+ Driver program and M T K Interface program.	
LONG & LOUD Sideways & Banner by Spectre Technologies. Mod 4/4D/4P TRSDOS/LSDOS. Order both Rembrandt and Long & Loud for \$ 67.50 (Z)	\$ 34.95 (Z)	MOUSE HOUSE HOLSTER	\$ 1.75 (X)
ASTROCAL by Vernon B. Hester Turn your Model 1, 3, 4/4P/4D in to a programmable calculator. Manual and diskette w/built-in operating system, ready to run. Specify computer Model 1,3,4.	\$ 29.95 (Z)	Holds mouse on side of computer out of the way.	
TRSCAN by J.F.R. Slinkman Scanner program for Chinon DeskScan 2000 with Model 4 using LSDOS 6.3.0 or 6.3.1.	\$ 45.95 (Z)	MOUSE PAD	\$ 2.45 (Y)
ROMCLOCK3 UTILITY PACKAGE by David Goblen. Clock operating system for SmartWatch or No Slot Clock LDOS 5.3.1 version.	\$ 5.00 (Y)	Better Mouse control, foam pad nonslip surface.	
ROMCLOCK4 UTILITY PACKAGE by David Goblen. Clock operating system for SmartWatch or No Slot Clock TRS/LS 6.3.1 version.	\$ 5.00 (Y)	MOUSE CABLE ADAPTERS	\$ 2.95 (W)
POSTMASTER by David P. Miller Make labels, letterheads Posters with a variety of Fonts and picture icons.	\$ 40.00 (Y)	Male 9 pin to Male 25 pin	
ARRANGER II by Dan Foy. Disk index program for TRS-80 Model I, III, 4/4D/4P. Automatically recognizes all major TRS-80 disk operating system formats.	\$ 39.95 (Y)	BOOKS	
ANSITERM 4 by Richard VanHouten. TRS-80 Mod 4 Hi-Res Communications Program. Supports ANSI & AVATAR control codes, IBM graphics, & file transfer by X or Y modem. Hi-Res board required.	\$ 30.00 (Y)	DISK INTERFACING GUIDE/MOD I by William Braden Jr. Out of print book.	\$ 1.85 (V)
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RS232 Serial Cable 6 ft.	\$ 8.95 (E)
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RS232 NULL MODEM Cable 6 ft	\$ 9.95 (E)
Connect two computers together.	
RS-232 EXTENDER CABLE	\$ 8.00 (Y)
For computers w/RS-232 connector pointing down on the bottom of the computer.	

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SELLING: M4, 128k, B&W CRT, 2 SSDD RS 180k drives, DMP200 printer & cable, LS-DOS 6.3.1, MOD 4 by Chris, M4 Tech Manual, L.Brother, DBase (85), Alcor Multibasic, Books on SuperScripsit. David H. Lindsey, 1306 Leeson Way, Bowling Green, KY 42103. (502)745-8401 W or 781-9570 H.

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VOL. #	ISSUE	ADVERTISING DEADLINE	MAILING DATE
Vol. 5 #2	February - 1992	Jan. 13	Jan. 28
Vol. 5 #3	March	Feb. 10	Feb. 25
Vol. 5 #4	April	Mar. 16	Mar. 31
Vol. 5 #5	May	Apr. 13	Apr. 28
Vol. 5 #6	June	May 11	May 26
Vol. 5 #7	July	June 15	June 30
Vol. 5 #8	August	July 13	July 28
Vol. 5 #9	September	Aug. 10	Aug. 25
Vol. 5 #10	October	Sep. 14	Sep. 29
Vol. 5 #11	November	Oct. 12	Oct. 27
Vol. 5 #12	December	Nov. 16	Nov. 30
Vol. 6 #1	January - 1993	Dec. 14	Dec. 29

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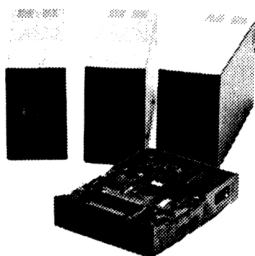
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